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ANTHONY'S

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ARTHUR H. ELLIOTT, Ph.D., F.C.S., Associate Editor.

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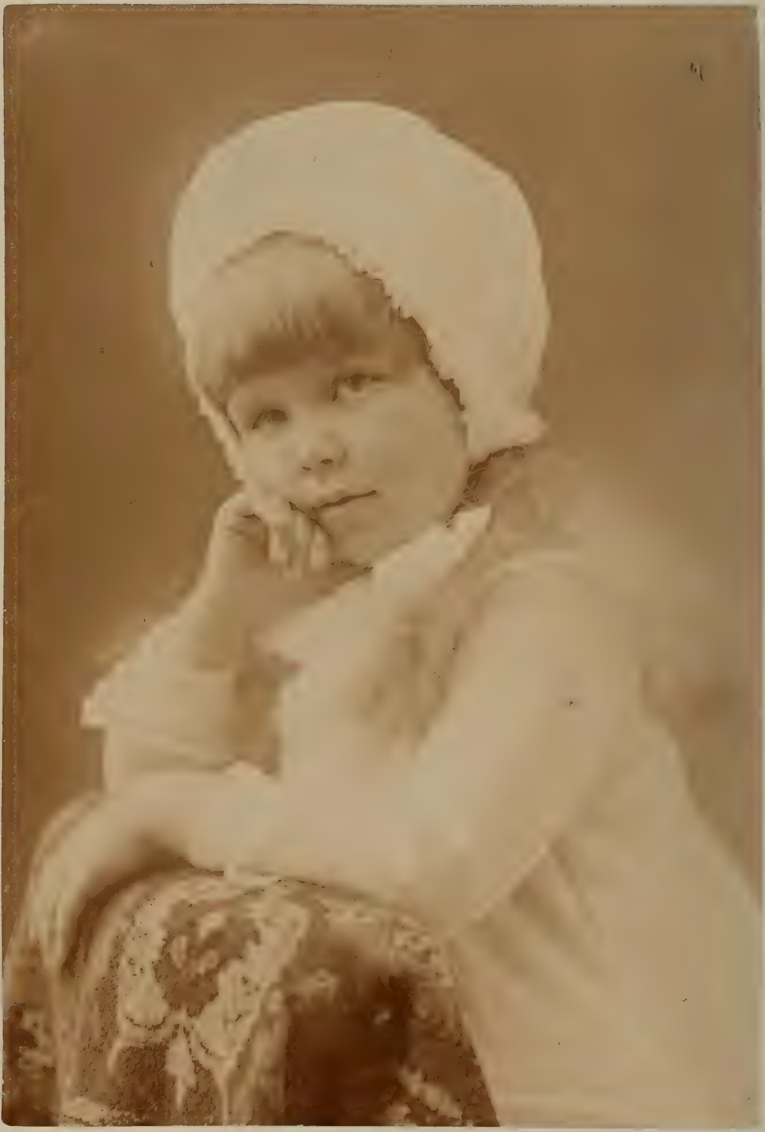

Negative on
Stanley Dry Plate,
with
Dallmeyer Lens.

A Child Study.
—BY—
H. McMICHAEL,
Buffalo, N. Y.

Printed on the
Celebrated N. P. A. Pense
Ex. Brilliant
Albumen Paper.

ANTHONY'S

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PHOTOGRAPHIC WORK IN WINTER.

As Jack Frost is now pretty much a master of the situation in regard to the weather, it may not be unprofitable to take council as to the best methods of circumventing his tricks in our studios and dark rooms. In the matter of such things as frozen water-pipes, there is, of course, no necessity to make any particular suggestions; but when it comes to the question of chilled developers and other solutions, a few thoughts and suggestions may not be out of place. If, for example, you are using a solution of sodium carbonate that is saturated, or nearly saturated, at a moderate temperature (say 60 degrees), and this solution becomes chilled to 32 degrees or lower, a large proportion of the carbonate will crystallize out on the bottom of the bottle that contains it. A developer made up from this solution, according to the ordinary formula to be used at moderate temperatures, will be too weak in alkali if the same proportions are used. This deposition of crystals from chilled solutions is not confined to sodium carbonate, but also applies to ferrous sulphate and potassium oxalate. It is therefore important to keep the developing room at a moderate temperature, in order to prevent the alteration in strength of the developing solutions from deposition of part of their active constituents in the bottom of the bottles that contain them. In professional work this influence of the cold weather is not felt as much as is often the case with the amateur photographer. In the dark room of the professional photographer there is some arrangement by which a constant moderate temperature is maintained. But we can conceive circumstances where this heating arrangement is left in charge of a subordinate of the studio, and where the stove (for instance) has not been properly supplied with fuel at night. In such a case the morning finds but a faint spark of fire among the ashes, and the bottles on the shelves are decidedly chilled and take many hours to recover their normal temperature. Now too much care cannot be taken to prevent this; for even if the solutions are not cold enough to deposit their active constituents, they will work very much more slowly in use owing to their coldness, and the best results in developing cannot be hoped for.

In the case of the amateur photographer the results of cold weather may be even more difficult to overcome. In such cases the dark room is not often used, and is generally in some out-of-the-way place, where the usual heating apparatus of the ordinary house has little effect. Under these circumstances a small gas

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stove may be very useful (where gas is available) to heat up the room some hours before it is used. An oil stove also answers admirably for the same purpose. Another good plan is to keep the developing solutions in some warmer place in the house—the kitchen, for example. At all events, amateurs, more than professionals, are much too careless about the question of temperature and its influence on development and other photographic processes, and we cannot too strongly impress upon them its great importance in successful photographic work.

The importance of keeping the various solutions used for making silver prints at the proper temperature has been repeatedly spoken of in these pages. No successful prints can be made when the silver bath is cold, the toning bath warm, and the hypo bath cold; they must all be not less than 70 degrees Fahrenheit, and the toning bath may be higher, say 90 degrees. We have seen more bad prints made upon good paper from carelessness in the matter of the temperature of the different solutions than from any other cause.

In a recent issue of the *British Journal of Photography* we note a suggestion that may be useful to professional photographers as a means of storing up heat to keep solutions from chilling. A large can is filled with a strong solution of hypo and heated to as high a temperature as possible with the means at hand. While hot it is corked up and placed in the dark room. The heat taken up by the solution is greater than that absorbed by the same volume of water, and is given out more slowly in cooling. The author of the above suggestion says: "All that is requisite is to make, in the first instance, a boiling saturated solution of the salt to be used and to cork up while hot. When required for use, all that has to be done is to loosen the cork for safety's sake and place the vessel on an ordinary fire or a gas stove, shaking it occasionally until the crystals redissolve. It is not necessary that they should completely dissolve, nor that the liquid should boil, but of course under those circumstances the greatest amount of heat is stored."

Using such an apparatus, he further states that a vessel having one quart capacity, kept in a closet containing four or five cubic feet of space, retained some heat after fourteen hours' radiation.

In the printing operations also another trouble may be experienced during the cold weather, that is the staining of unvarnished negatives from contact with the sensitized paper. This may come about in this way: A number of cold negatives are brought from a cold room into a warm one, and the moisture begins to condense upon them in the form of dew. This can be wiped from the backs of the negatives, but it is often forgotten that there is also moisture upon the film side, which is not visible to the eye. If sensitized paper is at once placed upon this surface in the printing frame a silver-stained negative is the inevitable result.

Varnished negatives are also liable to be injured in cold weather. If a cold negative is brought into a warm room the moisture that condenses upon it will penetrate the varnish more or less, and be absorbed by the gelatine underneath, for there are few varnishes that resist perfectly this action of moisture.

The above thoughts are the results of reading the comments of some of our English contemporaries, where some very cold weather has recently played havoc in their developing rooms. It is plain, from what we have said above, that photography at low temperatures is neither successful nor comfortable, and our advice is, keep everything pertaining to photographic manipulation in such a manner that abnormally low temperatures may not lead to failures.

EDITORIAL NOTES.

Professor Pickering, of Harvard Observatory, recently gave a lecture at the Boston Institute of Technology, and reviewed the photographic work done at Cambridge. The results obtained are very interesting, and consist, among other things, of photographs of the eclipse of Jupiter's satellites, the nebulæ of the Pleiades and Orion. In the case of the Pleiades the photo-spectrographic work has demonstrated that the different parts of the nebula are composed of the same or similar material; and confirmed the previous results obtained at New Haven by other methods, that certain stars which appear to belong to the Pleiades are of a different character and composition, and separate from the group.

A report comes from Boston that Mr. Frank Barentzen has discovered a method of developing gelatino-bromide negatives by the electric current (electrolysis). This is easily conceivable, but we fear there are many practical difficulties in the way of its becoming popular. Our experience with the applications of electricity leads us to believe that the ordinary developers have still a long future before them. Nevertheless we are glad to note that the method is being tested, and shall be interested in any results so obtained.

Yet another amateur photographic society is organized, this time in New Orleans. Dr. Mandeville is President of the new organization, and the meetings are to be held in the Tulane University. We note with pleasure that Mr. C. H. Adams, the photographer, gave his parlors for the meeting to organize the society. This is as it should be. The professional and amateur can work together, and the results will most surely benefit both parties.

The Camera Club of London has recently issued the first number of the new publication of its proceedings. This is a step in advance, as no scientific society can claim to be a benefit to the world unless it keeps a good record of the proceedings of its members. The New York society is doing excellent work in this direction.

At the annual dinner of the London and Provincial Photographic Association, a very pleasant duty was performed by the chairman, Mr. J. Traill Taylor, in the presentation to Mr. J. J. Briginshaw of a handsome Ross microscope. This gentleman is Honorary Secretary of the Association, and the presentation was made as a recognition by the members of the value of services which could never be adequately compensated. Messrs. Morgan & Kidd also presented him with a roll holder for his camera. Our readers will remember that Mr. Briginshaw, together with Mr. Taylor, was instrumental in organizing the English Photographic Convention at Derby last year; and it is with great pleasure that we note this handsome recognition of the services of a public spirited man, too often overlooked.

At the same dinner, Mr. W. H. Walker, of the Eastman Company, responded to the toast of "The American Association." He spoke of the ease and lack of formality at the English organizations as contrasted with those of America; and expressed his admiration of the graceful compliment just paid to the Secretary, Mr. Briginshaw, which he thought might be profitably imitated by American societies.

We have before us an advance copy of the *British Journal of Photography* Almanac for 1887, for which we are indebted to our good friend, Mr. J. Traill Taylor, the editor. As usual, it is packed with valuable photographic information collected from the best writers all over the world. We always find something useful and instructive in its pages, and it is so cheap that there are few who cannot afford to have it for reference.

America also has its photographic annual now, in the new "American Annual of Photography" just issued by the publishers of the *Photographic Times.* It is certainly a credit to both the editor and publisher, and is neatly printed and illustrated.

That the Bulletin is read pretty much everywhere is well known to us, but it is curious to note how some of our notes and papers come back to us after traveling half way around the globe. Some time ago one of our contributors wrote a short note upon a simple actinic light obtained by dropping sulphur into melted saltpetre. This was translated in the *Revue Photographique*, and now our Chicago contemporary, the *Photographic Beacon*, industriously retranslates it into English, giving the French journal credit for it. We suppose that the Frenchman was too lazy or too careless to give us the credit for the suggestion. No matter, we are glad to see that our little suggestions are noted as valuable.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Auxiliary Exposure and Its Value—Progress of the Magnesium Light—Spoiling of Plates in Newly Varnished Plate Holders—Camera Stands of Brass—Photography of Ancient Buildings in Course of Restoration—Belgium Exhibition and Acknowledgment of Photography.

In my last letter I wrote to you about Himly's auxiliary exposure. This, I believe, does not belong to the things which, like so many photographic novelties, appear only to disappear just as suddenly, but to those which may claim general attention pretty soon. The process has repeatedly been tested by portraitists and reproductive photographers, with the following results.

For views with dry plates, by application of the auxiliary illuminator the process is very suitable for exposures of three seconds and more; while for instantaneous views, also easily recognizable, the advantage is not so great. During winter we oftentimes require longer exposures, particularly for large pictures, and it is therefore of advantage to obtain, during the same exposure, sharper and better negatives.

In the application of collodion for reproduction purposes, the use of the illuminator is of great utility, the exposure being shortened by about half the time in clear weather, and about one-third on very dark days. The Photographic Society in Berlin (this being the name of a firm having a studio for reproductions) made some large pictures, after an oil painting, on a very foggy day, and exposed, without the apparatus, for fifteen minutes, while with the aid of the illuminator it took only ten minutes. Although the exposure was five minutes shorter than the other, the negative is fully as sharp and equally free from fog. Several experts who examined the views, passed judgment to the effect that those made with the aid of the illuminator showed decidedly more modulation. We have therefore now the means on hand to shorten the exposures with weak objectives by application of the illuminator.

The apparatus for auxiliary exposure is described by the inventor as follows:

"The auxiliary illuminator may be attached to any front board, and is constructed in the following manner: Slats, 1½ ctm. wide, and a little shorter than its length, running in a somewhat diagonal direction, are put on the upper and lower part of the board; on the sides are holes, to prevent endangering its stability. The objective is therefore surrounded in a square by openings by which light can pass into the camera.

"To also prevent the light from entering into the camera, a frame running in grooves (rails) is fastened on front of the board. This frame can easily be pushed upward until a spring catches it, and in this position the light can enter. If it is desired to stop the action of light, it is only necessary to touch the head of the spring, and the frame moves back in its former position by means of a spiral spring. If direct light strikes the plate it causes fog, and it is therefore necessary to arrange a screen, consisting of a piece of black tin. This is cut out squarely in the middle, to admit sufficient room for play of the lens. On the upper and lower ends it is slightly bent towards the inside and fastened with screws at the four corners. Upon these it can be moved more or less towards the board, so that the passing light can be regulated. This further admits of conducting more air to any part of the plate by a corresponding oblique position of the tin, which, under certain circumstances is also of importance. The screen distributes the light towards the sides of the camera, while the square cut out permits that the diffused light unites with the light passing through the lens."

The dark winter days, in which the sun is often not visible for weeks in Germany, have also placed other means of illumination in the foreground. Among these magnesium stands first, and it has commenced to become a formidable rival to the electric light. At all events we have to note no advance lately in the application of the latter to photography, while new constructions of magnesium lamps are recommended from all sides, and are actually applied diligently as auxiliary lights for photographing.

The incomplete lamps were a great inconvenience, conducting the wire with uneven rapidity to the burner, oftentimes causing the light to be extinguished. This has now been removed by the new construction of O. Ney. Its clock-work is so regulated that it pushes the wire evenly forward, and needs winding up only every three hours. It has at the same time an arrangement to keep the burner opening clean from accumulating white fumes, which otherwise might cause the light to be extinguished. The apparatus works excellently, and is already applied extensively as a signal lamp. It will serve with much better success for the sciopticon than the old unreliable lamp.

In my last letter I wrote to you about black stripes showing on plates kept in completely light-tight plate holders, particularly in those where the front slide had been removed. I have now received several communications showing that this defect has been observed by others. Dr. Hitzemann, of Schaumburg-Lieppe, writes me that to five old plate holders he added a new one, and that he filled the latter and two of the old holders with plates. After keeping them in a secure place since the 10th of August, he developed the plates lately, and the result was that the plates in the old holders gave blameless negatives, while those in the new holder were totally fogged. I am convinced that the fresh varnish on the holder is the cause of all this. It takes weeks before it becomes thoroughly dry, and the evaporating moisture acts disadvantageously upon the plate. I can therefore only approve the holders of American make, which are simply coated with asphaltum varnish.

Herr Reinecke (of the firm of Müller & Reinecke, Berlin) lately showed some metallic tripods, one of them made of round, the other of triangular hollow brass tubing. They have a great solidity and are of moderate weight, and, by telescoping, can be shortened to one-half their heigth. This is of great convenience on grounds where it might be desirable to have one leg shorter than the other. Mr. Reinecke expects to manufacture these tripods at the same price and weight as the wooden ones he now makes. They are also intended and particularly suited for astronomical and surveying purposes. Herr Reinecke also showed an arrangement for angular measurements. This admits an exact horizontal and angular measurement to minutes, and might be well adapted as a carrier for the photo-grammetry camera. They are also secure against warping and splitting.

Photography also finds application lately in the restoration of ancient and celebrated buildings, and with great advantage. I have seen old buildings restored, whose ruins were well known to me, and after restoration I hardly could recognize them. Parts of a frieze, which I had observed, were entirely ignored, other ornaments had been removed. If all these details had been photographed, unscrupulous destruction could have been proven. At present a little more care is exercised. A photographic view is taken before the restoration takes place, and it can easily be seen from the photograph whether the original has been copied correctly or not.

My report about the Scientific Exhibition here has given you an idea of the advance of photography as applied in science and the arts, and it is acknowledged and esteemed more every day. From Brussels they write us about the International Exhibition, which is to take place in 1888, and that all prizes are to be paid in cash. In the photographic department they offer a prize for the quickest apparatus, reproducing the best colors, natural events, biological appearances, and chemical and mechanical processes. It can be seen at a glance that this programme was not made by a photographer, because chemical processes are just as necessary for these requirements as an apparatus, and it is known that a so-called universal apparatus does not exist. It may be very good for portraits, but unsuitable for reproductions and other work. But no matter, it is significant enough that a commission of scientists, who have no practical experience, have such a high opinion of photography that they place the same alongside of the steam engine, the developer of the industry of the present time.

BERLIN, December, 1886.

YOUR BULLETIN comes to hand and its contents are carefully examined, and I must say that every year shows a decided improvement.

A. G. GRANT, Georgia.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From our Special Correspondent.*]

ENGLISH NOTES.

English photographers have formed more than one club, but these have hitherto been of a slight and transitory nature, generally meeting weekly or fortnightly only, and being, in fact, nothing but photographic societies where the members were allowed to smoke and take a friendly glass. But the establishment of the Camera Club marked a new era, and afforded additional evidence of the growth of photography. At present the club occupies a first floor at 21 Bedford street, Covent Garden, just opposite Macmillan's, the publishers, and one of the most central spots in London. There is a large and commodious front room, furnished in excellent taste, which will accommodate perhaps sixty or seventy people at the reading of a paper; a model dark room, about 18 by 12, fitted with lockers and every possible requirement for the development, etc., of plates; and another room for the attendants. I was rather amused at the scale of charges for materials used by members in developing, etc., which hangs in the dark room: "Three plates, any size up to 5 x 4, by any pyro developer, one penny; ferrous oxalate solution, one halfpenny per ounce; hypo or alum saturated solution, one penny per pint; toning, per ounce of solution containing one grain of gold to the ounce, two-pence." Each member calculates roughly how much he has used, and drops the amount into a box in the dark room. The dark room windows and lamps are so arranged that any combination of color can be used—cherry fabric, golden fabric, canary medium, ruby glass, pot yellow, stained orange. The hypo is kept in large vertical glass baths, held in wooden frames, and to those who possess the baths of this kind which were in universal use in the "wet collodion days," I say, "turn them into hypo baths," they answer splendidly. For the mental needs of its members the Camera Club provides "Thursday evenings," when papers are read or demonstrations given, while their bodily wants are catered for with equal care. On the rare occasions when I have been able to call in, I have found groups of kindred spirits talking "shop," or studying the countless pictures, frequently renewed, with which the walls are covered. For all these benefits the annual subscription is, for town members three guineas, for country members one guinea, with an entrance fee of like amount. The number of members now exceeds three hundred, and it is quite certain that the accommodation must be extended. It is an open secret that the able editor of the *Amateur Photographer*, Mr. J. Harris Stone, was a prime mover in the foundation of the club. But all the officers are first-rate men of business, while for the President, Captain Abney, no one will deny the title of "the most scientific photographer in England." Visitors from America should certainly not neglect to drop in at the Camera Club, where they will see much to interest them and will receive a hearty welcome.

Every now and then I hear inquiries as to the best medium for mounting photographs. Starch is good, but it will not keep. I always use the following: Soak half an ounce of gelatine for half an hour in soft water; now place it in a beaker, or a wide-mouthed bottle, able to hold eight or ten ounces; add four ounces of methylated spirits of wine and a quarter of an ounce of glycerine, also two drops of carbolic acid; place the mixture in a saucepan half full of water, and set it on the fire. Amalgamation soon takes place, and the solution must be used while hot. To apply the mountant to the photograph most people use a flat camel-hair brush; but the hairs come out, and I much prefer what is sold here as a "round hog-hair stencil brush."

Talbot Archer.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

J. H. CROUCHER appears to have been the author of the following book:

1850. "Practical Hints on the Daguerreotype: being simple directions for obtaining portraits, views, copies of engravings, drawings, sketches of machinery, etc., by the daguerreotype process; including all the latest improvements in fixing, coloring, and engraving the pictures, with a description of the apparatus, illustrated with engravings. By the editor of Willats' Scientific Manuals, No. I. Third edition with additions. Willats' Scientific Manuals, No. II. 12mo. 46 pp., 30 wood-cuts, and supplement of 2 pp., 'The American Daguerreotype Process.'" Tard R. Willats, 28 Ironmonger lane.

I have not been able to trace the first and second editions of this book.

L. J. M. DAGUERRE, a French scene-painter, born 1787, died 1851, was the practical inventor of photography. He published his "daguerreotype" process in 1839, describing it in a little treatise which was translated into English, German, etc.

1839. "History and Practice of Photogenic Drawing on the true principles of the Daguerreotype, with the new method of Dioramic Painting. Secrets purchased by the French Government, and by their command published for the benefit of the Arts and Manufactures. By the inventor, L. J. M. Daguerre, Officer of the Legion of Honor and Member of Various Academies. Translated from the original by J. S. Mernes, LL.D., Hon. Member of the Scottish Academy of Fine Arts, etc." 12mo. pp. vi. and 76. Six plates (preface dated September 13, 1839). Published by Smith, Elder & Co., Cornhill, and Adam Black & Co., Edinburgh. 2s. 6d.

A second edition was published in October of 1839 by Smith, Elder & Co. (wrongly stated in English catalogue as published by Longmans), which has twelve pages of introduction instead of six.

1839. "History and Process of Photogenic Drawing by means of the Daguerreotype. Published, by order of the French Government, by L. J. M. Daguerre, Officer of the Legion of Honor. With Notes and Explanations by M. Arago, Member of the Chamber of Deputies." Illustrated by six engravings. 46 pp. W. Strange, 21 Paternoster row.

The copy which I have examined bears no price. The six plates are *facsimiles* of those in the translation by Mernes.

1839. "A Practical Description of that Process called the Daguerreotype. This process consists in the Spontaneous Reproduction of the Image of Nature received in the Camera Obscura, not with their color, but with great nicety in the gradation of shades. By M. Daguerre, Painter, Inventor of the Diorama, Officer of the Legion of Honor, etc. Translated by J. P. Simon, M.D., a native of France, M.R.C.S. London," etc. 38 pp. Two plates. John Churchill, Princes street, Soho.

This somewhat amusing pamphlet is dedicated to Charles Hastings, Esq., M.D., and the preface is dated October 30, 1839. At the end are four pages of "Notes" on the medical experience of the translator, who also announces his intention to lecture on the daguerreotype process on November 8th, and offers his services as a lecturer to scientific institutions and schools.

J. H. Dallmeyer, the famous manufacturer of photographic lenses, was born in Prussia in 1830, and died in 1883. He was the son-in-law of another famous optician, the late Andrew Ross.

1872. "On the Choice and Use of Photographic Lenses." J. H. Dallmeyer, optician, 19 Bloomsbury street. 6d.

Fifth edition, 1884. 8vo. 12 pp. Paper covers. The editions were of 1,000 each.

J. F. Daniell, F.R.S., was Professor of Chemistry in King's College, London. He was the inventor of "Daniell's Cell" so largely used in electricity.

1843. "Introduction to the Study of Chemical Philosophy." Second edition. (Photography, pp. 452–461.) 8vo. 764 pp. Published by J. W. Parker.

New edition, 1851. Parker & Son. 21s.

Thomas Davidson was an ingenious workman who took up the art of photography almost immediately after its publication in 1839. He ground his own lenses, constructed his own apparatus, and was one of the first to practice photography in Scotland.

1841. "The Art of Daguerreotyping, with the Improvements of the Process and Apparatus." Edinburgh.

George E. Davis, a North of England man (editor of the *Northern Microscopist*) is interested in photo-micrography, respecting which the following book contains some excellent hints.

1881. "Practical Microscopy." 8vo. Woodcuts. Colored frontispiece. Bogue. 7s. 6d.

Second edition, 1882. 335 pp. 275 woodcuts and colored frontispiece. ("Photo-Micrography," pp. 207–228.) D. Bogue, 3 St. Martin's row. 7s. 6d.

Sir Humphrey Davy, the great chemist, was born of humble parents at Penzance in 1778. He was made Professor of Chemistry at the Royal Institution, London, in 1802, and President of the Royal Society in 1820.

1839. "Collected Works of Sir H. Davy;" edited by his brother, J. Davy. Smith, Elder & Co. Nine vols. Post 8vo. 10s. 6d. each.

Vol. II, pp. 240–245, contains the famous paper by Thomas Wedgwood (son of the great potter) and H. Davy, entitled "An Account of a Method of Copying Paintings upon Glass, and of Making Profiles by the Agency of Light upon the Nitrate of Silver. Invented by T. Wedgwood, Esq., with observations by H. Davy." This paper first appeared in the *Journal of the Royal Institution*, Vol. I, in the year 1802. At the time of publication of the paper, Wedgwood had been dead for some years, but his observations had been repeated and extended by Davy. No difficulty was found in taking copies of opaque objects by laying them upon paper prepared with silver salts (Davy found that the chloride was more sesitive than the nitrate of silver), but attempts to obtain pictures with the aid of the camera obscura failed, although better success was had with the stronger light of the solar microscope. But the great objection was that no means was known of fixing the pictures obtained—they all faded on exposure to daylight. Davy writes that "Nothing but a method of preventing the unshaded parts of the delineation from being colored by exposure to the day, is wanting to render this process as useful as it is elegant." Alas, that he did not look a little more perseveringly for such an agent. If he had done so, photography would now be 84 years old instead of 47.

George Dawson, M.A., Ph.D., formerly Lecturer on Photography at King's College, London, and late editor of the *British Journal of Photography*, has written the following books in addition to his frequent contributions to periodical literature.

1873. "A Manual of Photography," founded on Hardwich's Photographic Chemistry. Foolscap 8vo. Illustrated. 276 pp. J. & A. Churchill, New Burlington street. 5s. 6d. This is usually regarded as the eighth edition of Hardwich.

1884. "A Popular Treatise of Modern Photography, useful alike to the Professional and the Amateur, as a Guide and Companion in their Daily Practice." 12mo. 95 pp. G. Mason & Co., Photographic Dealers, Sauchiehall street, Glasgow. 1s.

Dawson also assisted Thomas Sutton in the preparation of the second edition of his "Dictionary of Photography," 1867, for details of which see "Sutton."

(*To be continued.*)

SHORT NOTES FROM THE CAMERA TO THE PRINT.

BY J. J. ACWORTH, F.I.C., F.C.S. LOND.

(*Continued.*)

Negatives are frequently under or over-developed. The former is often a serious defect, difficult, and often impossible to remedy. In the latter, cure is often easy, the best and safest reducer, as far as my experience goes, being cupric chloride, not too strong, say a two per cent. solution, applied for a few minutes; the negative is then carefully washed and placed in hypo. If reduction be not carried far enough, the same process is repeated. I always consider it well to rather over-develop and trust to reducing when necessary. Intensifying is, to my mind, always undesirable, though the $HgCl_2$ (corrosive sublimate), followed by silver cyanide in potassium cyanide, seems to give very satisfactory results.

Another important method by which the printing negative may be improved, is by coating the back with mat varnish, scraping away when there is plenty of density in the negative, and painting in with Prussian blue, or even gamboge, over the parts where the negative lacks density. I have seen some negatives worked up this way in quite an artistic manner. I remember one especially, which showed me what could be done in this direction. This negative had a monotony of deep shadow. Almost in the middle of the picture and across the shadow, running in a more or less graceful curve, was an outspreading branch of a tree with a few leaves; this was worked in with Prussian blue; it entirely broke the monotony, and gave at once sparkle to the picture. There is a variety of dodges for improving negatives, making even indifferent ones give fine results, but I must hurry on, or Mr. Editor will complain that my notes are not so short as they might be.

The negative determines the artistic value of the print; at least this is the case with albumenized paper. It is true that with bromide positive paper greater latitude in the negative, as regards intensity, is permissible; that is from a very thin negative, such as would give a very poor result with albumen, a fine print with bromide positive paper may be obtained. The same applies to a very dense negative, the good result in each case being dependent on the intensity of the illuminant; considerable distance from the source of illumination being required by the thin negative, and proximity in the case of the dense one. As albumenized paper is still mostly used, I will confine my remarks to it. After the printing the toning is an important operation. As the result of some years of experience, I think the following the best and simplest toning bath:

Chloride of gold	1 grain.
Acetate of soda	60 grains.
Chalk or whiting	a few grains.
Water	½ ounce.

This mixture is boiled for a minute and then made up to 10 ounces. It is ready for use at once. It tones easily and keeps all right.

Then the fixing. There is one trouble that may occur at this stage, that is blistering. I have never been absolately free from it. About the safest plan to cure this defect is to add ammonia; about one or two minims strongest ammonia to every ounce of fixing solution. Dilution of the hypo will also help in preventing this trouble, but I scarcely think it desirable to work with a solution of hypo much less than 1 to 8 water.

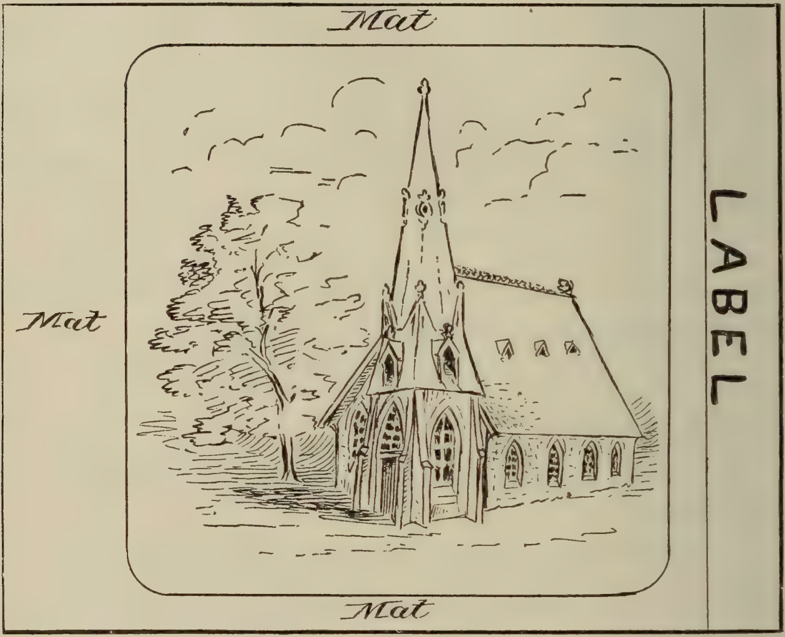
Washing is a very tiresome operation. With many workers the prints are in the water far too long; a good washing, that is when the prints are prevented from coming into contact with each other and the water frequently changed, for 4 to 6 hours should be sufficient, I think, for any albumenized or other print. One point must not be overlooked, that is, when prints are in contact they are not being washed at all.

My concluding remarks refer to mounting. When required on boards not too large in size, and which can be hot-pressed afterwards, the prints can best be mounted wet, and preferably with starch. When required in albums or books they must be mounted dry in order to prevent cockling. For convenience it is necessary that the prints before mounting should be quite flat, or curled face outwards. To attain this end, the print is placed face downwards on some self-yielding material (say a few folds of flannel upon a table), and the back repeatedly rubbed with the smooth and rounded edge of a strip of wood—a paper-knife answers fairly well. For mounting, say in an album, where the least cockling is inadmissible, I always place the print in the exact position where it is to be finally fixed; then make a mark at the right hand corner, and another at two or three inches further along one of the edges. When ready, the print is laid down on some even surface, and quickly brushed over with the mountant, then carefully placed down at the marked corner first, and manipulated so as to follow the guide marks exactly, and afterwards with a clean cloth pressing down the whole of the picture carefully until complete contact is everywhere obtained. As a mountant, I find book-binder's glue dissolved in a minimum of water and with the addition of a little sugar, work well. It must not be too dilute. I have also found a mixture of soft gelatine or good glue, glycerine, brown sugar and a little alcohol give good results. Strong dextrine in water and alcohol works fairly well, though for myself I prefer to use a mixture containing glue.

AMERICAN LANTERN SLIDE INTERCHANGE AND THE INTERNATIONAL EXCHANGE.

During the past year an interchange of lantern slides took place between the Amateur Photographic Societies of New York, Philadelphia, Pittsburgh and Cincinnati, which proved successful. It is now proposed to extend and systematize this interchange among a larger number of societies; the plan being that each of the societies joining in the interchange are to loan a set of one hundred slides, selected by them from among their own members.

The slides must be neatly mounted, named or numbered, and of a uniform size ($3\frac{1}{4}$ x 4 inches being the standard), with an opening in the mat not to exceed $2\frac{7}{8}$ inches square.



The above cut shows the standard size and method of mounting. The label should be on the right hand side of the glass cover.

It is understood that the preparing of the slides must be entirely the work of those contributing.

Probably six or more societies will join in the interchange, and the slides would be shipped by one to the other, say every month, beginning January 1st, until the several sets have made the circuit of the respective societies, and are returned to their original owners.

From the slides that were loaned in the interchange last winter, including a few contributed by the Boston Amateur Photographic Society, two hundred were selected by the Lantern Slide Committee of the New York Society, which were shipped to the Camera Club of London, in exchange for two hundred of their choice English slides. These English slides will be loaned this winter for exhibition to the five (5) societies that contributed to last year's exchange, and afterwards will be divided *pro rata*; that is, each society is to receive as many foreign slides as they contributed American.

It is intended to renew this exchange this year, and it is hoped that all the societies who join in the American interchange will permit the Lantern Slide Committee of the New York Society of Amateur Photographers to select what they wish from those loaned to send abroad.

They will note the slides when exhibited in New York, and after all the slides have gone around the circuit, will ask that those they have selected be sent to them by the respective societies.

With six clubs, perhaps thirty or forty would be selected from each, and when the English slides are received, after being exhibited in turn by the contributing societies, they would be distributed *pro rata*, as above described.

The above system of lantern slide exchanges is under the supervision of Mr. F. C. Beach, of New York, and Mr. George Bullock, of Cincinnati; while the management of the details rests with Mr. Richard S. Lawrence, 31 Broad street, New York City, from whom any further information can be obtained. The success of the past efforts in these exchanges is beyond question, and an extension of the system should meet the approval of all amateurs interested in this beautiful class of photographic work.

PHOTOGRAPHY AT LONG RANGE.

We take from *La Nature* the following account of methods employed by different operators in photographing distant objects in a landscape. M. Lacombe who uses the first method, describes his apparatus as follows:

It simply consists in placing a telescope in front of the objective, and maintained in place by screwing a collar, *A* (Fig. 1), into the tube of the lens, *B*. A diaphragm of large opening placed at *C* prevents the contact with the objective, which is placed at *D*.

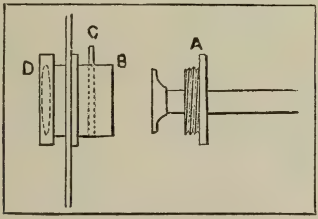


Fig. 1.

"The telescope which I use," says M. Lacombe, "enlarges about fifteen times. For objective I have a set of Darlot's, composed of four lenses of 10, 11½, 13 and 18 inches focus. I use, indifferently, the one or the other, the difference of focus appearing to me to have no influence. The size of the image depends on the length of the camera—the greater the length the larger the image, but, on the contrary, the less sharp it is. The adjustment is made by the aid of the eye-piece of the telescope (Fig. 2), on which rackwork serves to facilitate adjustment.

"The presence of a photographic objective does not appear to me indispensable (considering that I have obtained pictures without an objective, but very faint), and it is sufficient to have a telescope absolutely achromatic and free from chemical focus. The lack of sharpness in my proofs appears to me to be due to this cause. But there is always an obstacle to great clearness, in the mist which is constantly in the atmosphere. I believe that the method will be of some utility in military science. I first had the idea during the siege of 1870, but it was completely forgotten until the experiences in balloon photography recalled it to my memory."

Among a number of photographs taken by M. Lacombe with the above arrangements, are pictures of the Trocadero palace and the dome of the Invalides, taken from the top of the tower of Saint Jaques, in Paris.

Another method of using the telescope in conjunction with the camera is described by M. Emile Mathieu, who, after arranging his photographic apparatus, closes the joint around the objective and eye-piece with a piece of cloth.

"Properly speaking," says M. Mathieu, "I did not fix the eye-piece to the objective. I united them solely by a tube of red fabric, which is non-actinic; but the red rays interfering with the observation of the image on the ground glass, I finally enveloped it roughly in a black cloth.

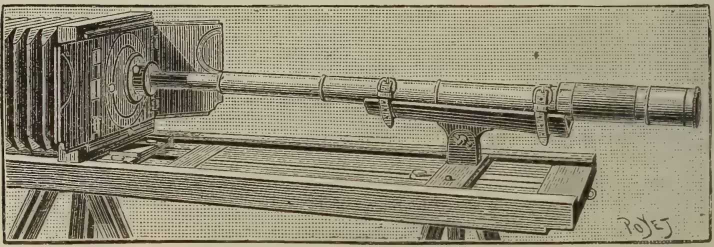


FIG. 2.

"This is how I operate. I place the telescope in the desired direction and adjust it. I have employed three modes of suspension for the telescope: On the tripod for surveying operations (Fig. 2), on a board attached with two screw-eyes; and finally I have employed the method of suspension represented in Fig. 3, which, in the interior of an apartment, admits of easy horizontal setting. The wires of suspension are of brass and very fine. I obtain vertical adjustment by twisting the wires around the arms."

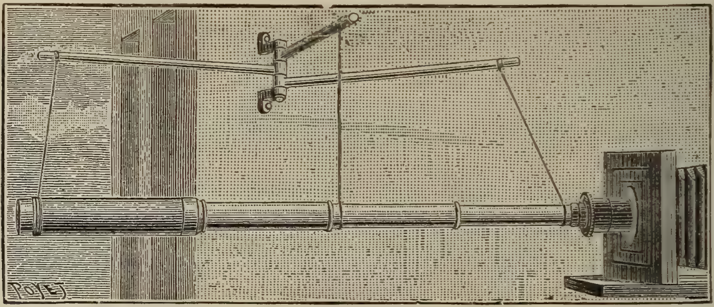


FIG. 3.

M. Mathieu uses a telescope that draws out 24 inches. We reproduce a couple of his pictures for the benefit of our readers. One is a scene of the environs of Culoz-in-Ain, France (Fig. 4); the other a view of *A*, Fig. 4 (left of center), which is the Château de La Fléchère (Fig. 5). The last picture is of the same size as the original, while the whole scene is reproduced about three-quarter size. The view of the château was taken at a distance of 1 kilometer 200 meters (about 1,312 yards).

"I hope," says M. Mathieu, "to obtain better results, as I actually employed a telescope of inferior quality. I believe there are two conditions absolutely necessary to obtain results. (1) That there should be no trace of luminous rays between the telescope and the photographic objective. (2) A proper estimate of the time of exposure. My apparatus is 13 x 18 centimeters (about 5 x 7 inches); the objective is a Darlot hemispherique No. 2. For the full view, without the telescope (Fig. 4), I exposed 5 seconds, which is a little short, with a diaphragm of 2 millimeters ($\frac{1}{12}$ inch) in diameter. For the long range photograph I exposed 90 seconds."

M. Mathieu also states that he obtained similar results operating at 6 kilometers distance (about 6,560 yards).

M. Narciso de Lacerda, of Lisbon, has made photographs with an astronomical telescope at a distance of 2 kilometers (2,186 yards). "The apparatus employed," says M. Lacerda, "is simply the adjustment to a camera 9 x 12 centimeters ($3\frac{1}{2}$ x $4\frac{3}{4}$ inches) of an astronomical telescope of 108 millimeters ($4\frac{1}{4}$ inches) in diameter, with its objective and eye-piece, which enlarges 80, 100, 150, or 250 times, as necessary. The objective of the camera is removed. I have obtained in this way very satisfactory negatives of the moon; although astronomical negatives were more difficult to make because of the diurnal movement, my telescope not having a clock-work movement. It is clear that one is able to work no matter what the telescope. One operates the same as in photographing with the microscope. Here the telescope is substituted for the microscope. My arrangement is a little primitive; the camera is lightly attached to the eye-piece of the telescope, as the lens of the camera is removed. The adjustment is made by guess-work, as the objective of the telescope is arranged for visual observation, and consequently is not achromatized for the chemical rays, which are those that serve specially for photography."

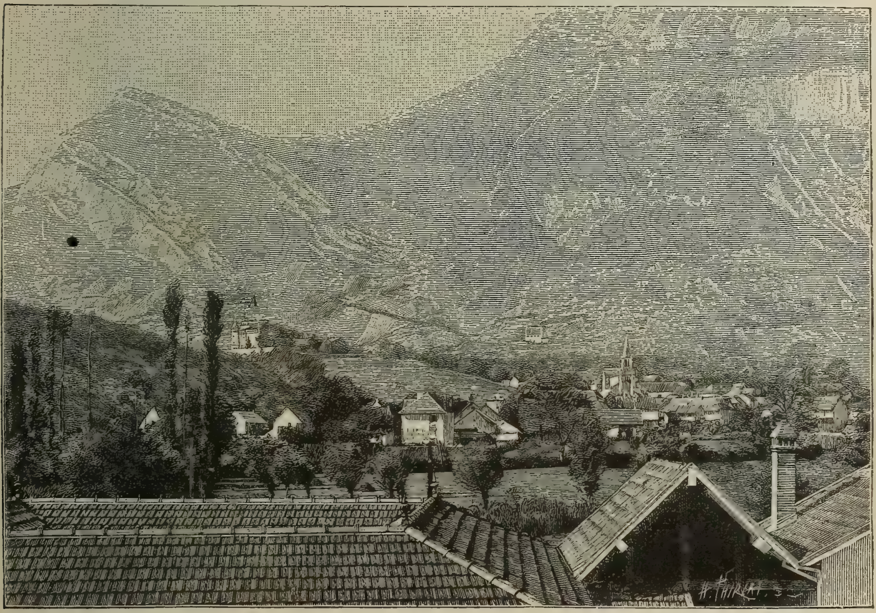


Fig. 4.

It appears certain that with apparatus constructed specially for the purpose, more important results than these we have noticed would be obtained. Here is an opportunity for constructors of apparatus. It also appears that long range photography would be of great service to the military officers in charge of balloons in warfare, and also to explorers for obtaining more accurate accounts of inaccessible places.

We have taken the above accounts from our French contemporary, *La Nature*. In the *British Journal of Photography* of December 3, 1886, we note the following letter, which shows that the idea is not a new one, although capable of much larger development at the present day, owing to the ease of manufacturing the modern dry plates.

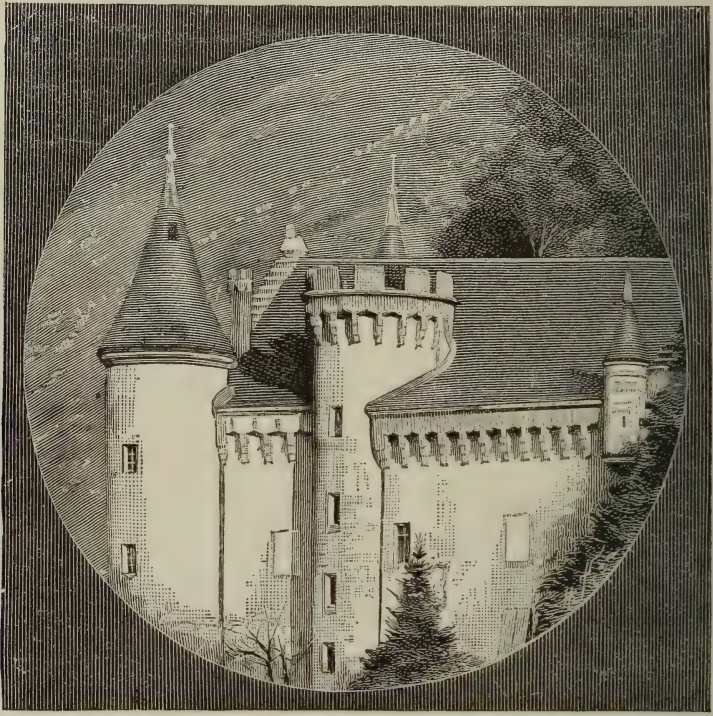


FIG. 5.

GENTLEMEN,—I note in your "Jottings," at page 743 in *Journal* of 26th instant, allusion to an article in *La Nature* on the above subject, and that you purpose to devote an article to this interesting topic.

Permit me, in advance, to draw your attention to the fact, that by permission of my friend and brother amateur, Mr. George Thomas, of Rock Ferry, I exhibited with my collection at the recent Glasgow Photographic Exhibition, a print from a negative which he produced during the Crimean War, which illustrates what has been done at "long range" as far back as 1854. The text of the Catalogue runs as follows, page 21:—"98 (O). A Suggestion for Military Purposes, by Mr. Thomas, in 1854 (during the Crimean War), viz., a print from an experimental negative of the Fort at New Brighton, on the Cheshire side of the Mersey, taken from the Lancashire coast, three miles distant. Lens, the object glass—three-and-a-quarter inches diameter, stopped to one inch—of a five-feet telescope; this was placed at one end of a box and a plate at the other. By this simple arrangement the object is represented as it is seen through the telescope."

The print was also made in 1854, and though now, after thirty-two years, somewhat dilapidated, shows what "possibilities" lie in this direction. I am, yours, etc., J. B. SAYCE.

REDCROSS CHAMBERS, LIVERPOOL, November 29, 1886.

METHOD OF EMPLOYING WINTERTHUR GELATINE WHEN USED FOR GELATINO-BROMIDE OF SILVER AND PHOTOTYPY.

Before using the gelatine in the preparation of photographic plates or in phototypy, it is important to cleanse it from the soluble matters it may still contain by means of cold water. For this purpose the necessary quantity of the gelatine is weighed out and macerated in a cold solution of potassium bromide, containing one-half to one per cent. of the salt. It is allowed to steep for about one hour, particular care being taken that the gelatine is entirely submerged the whole time.

After this lapse of time, the bromide water is decanted as much as possible, and the gelatine is washed in four separate changes of cold distilled water, which are used at intervals of five minutes, a glass rod being used to facilitate the action of the water. If the last washing still produces a dirty wash water, or a white and abundant scum, it is necessary to continue the washings until a limpid water is obtained; but ordinarily the four washings are sufficient.

It is preferable to employ a tared vessel that may be weighed after the washings and with the swelled gelatine, in order to ascertain the weight of water absorbed by the gelatine, and subtract it from the quantity given in the formula according to which the subsequent work is done. If the quantity of water absorbed was too large, by pressing the gelatine in a piece of muslin or bolting-cloth, the weight may be considerably reduced.

It is equally necessary to employ extreme cleanliness in the vessels used, and also the glass covers, during the operations. In employing muslin, it is necessary to wash it, as well as the hands of the operator, in distilled water.

By conforming strictly to the instructions given above, plates will be obtained of irreproachable purity.

[*From Photographische Mittheilungen.*]

THE PHOTOGRAPHY OF STARS FOR DETERMINING DISTANCES.

By Dr. O. Lohse, *of the Potsdam Observatory.*

While taking photographic views with the large refractor of the Potsdam Observatory, which had kindly been placed at my disposal for this purpose, I was able to bring into execution the project of using the main tube for exposures in place of the finder. For this it was necessary to construct a new camera arrangement by which the whole disposable field of the instrument came into use, as space had to be obtained for the ocular, destined for pointing. This could be done without any difficulties, the construction of the refractor admitting the taking off of the relatively narrow ocular extension. The new camera, constructed under my directions by A. Töpfer, of Berlin, consists of a brass tube with flange, 146 mm. (6 inches) wide, and within the same is a second close-fitting tube, admitting a displacement parallel to the axis of the telescope.

This displacement is necessary to bring the sensitive plate exactly to the correct level; and, notwithstanding the relatively large dimensions of the tubes, it can be done easily and securely when both handles are used. The latter are connected with the inner tube and are passed through spiral shaped notches in the outer tube, an arrangement applied in similar way on microscopes. The amount of the displacement in the direction of the axis is read off on a corresponding division into millimeters, and the above mentioned handles serve at the same time to clamp the two tubes. At the face front end of the inner tube there is a box-shaped adjustment intended to receive the photographic plate holder, and for which, according to technical custom, I will use the designation "camera." The connection of the camera with the inner tube is effected by a plate which can be revolved, and can be fastened in any position within sight of the circular division. The camera has been adjusted somewhat eccentric to the axis of the instrument, to give, at the end of the disposable visual field, space for an ocular. The ocular fastened to the outside of the camera corresponds with an opening in the before-mentioned revolving plate, so that rays from the objective can be collected by it. As the ocular can be moved around the whole circumference of the visual field by rotating the camera and the plate solidly connected with it, the most favorable conditions are offered for the discovering of a star in the neighborhood of the object to be photographed, and which, during exposure, can be used as a focal point. This is important, as the surrounding space of objects whose tint is fixed (star groups), is sometimes poor in stars suitable for focusing.

The plate holder serving for the sensitive plate, I have constructed differently from the usual kind, with the intention to avoid the pulling out of the slide from the side for exposing the plate, a hurtful pressure upon the instrument being easily exercised, and because changes might take place in the direction of the telescope after focusing. A projecting slide oftentimes retards also the necessary manipulations during focusing, which are continually used during exposure. To avoid these defects, I have given the plate holder, towards the side of the lens, the form of a flap, turning around an axis whose rests are in the plate holder frame. The thin steel axis of the flap has been filed square at one end to apply a watch-key, with the aid of which the turning of the flap can be effected from the outside. The whole is so arranged that the plate holder has no projecting parts and can be inserted without any hindrance into the frame of the camera. In the closing position the flap snaps into a weak spring just strong enough to hold it, but which admits the reopening of the same by a weak pressure with the key. For transportation and unpacking the plate holder was not considered secure enough, and it was deemed necessary to adjust a safety arrangement, which at the beginning and towards the end of exposure can also be directed by the watch-key. For those positions of the camera in which the flap has to be moved upwards during exposure, and therefore would fall back again by its own weight, another adjustment has been made to loosely check the flap. In the latter, consisting mostly of hard rubber, two openings had to be made to let the air out when the telescope is closed. The entering of extraneous light was prevented by covering the openings with black cloth.*

The closing of the camera towards the side of the observer is effected by a metal cover, which is fastened to the plate holder frame by two bolts moving simultaneously.

It is yet to be mentioned that the size of the plates which can be put into the holder is 98 x 119 mm., and that these are the extreme outside limits for the available space. These dimensions are adequate to a field of 60–73 minutes of arc.

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* For photographing views of planets, double stars, etc., it is of advantage to choose another construction of the plate holder, which admits a displacement of the light-sensitive plate towards the ocular or microscope intended for focusing, to facilitate the taking of the same object several times upon one and the same plate. The arrangement might also be so that a system of enlargement might be added, which admits the taking of large pictures. At this opportunity I would like to remark that the method of direct enlargement was proposed by me already four years ago, in publication No. 9 of the astro-physical observatory at Potsdam, page 56, and came to execution later on in a way when I interposed in the cone of star rays from the objective a simple biconcave lens.

I come now to the arrangement which is intended to correct the displacement of the star pictures upon the sensitive plate during exposure (caused by a change of refraction and irregular clock-work), and to reduce the action of the light to the smallest possible space. As far as I know, illuminated cross lines, upon which the ocular or microscope is focused, are mostly used. The arrangement required for the lighting of the threads is always a little complicated, seldom works to satisfaction, and the adjusting and preserving of the light source, be it electric, or simply based upon combustion, always causes difficulties.

Besides this, I have made the observation, that by pointing upon the cross lines of two threads, the observer is apt to be in doubt if the star is actually in the diametrical point of the threads; the four pieces of thread extending from the crossing point offer sufficient opportunity that the star, particularly a weak one, be also covered in an eccentric position. Endeavoring to meet the defects so experienced, the idea came to me to use a ring micrometer, like the arrangement for pointing, consisting of concentric rings, one the smallest possible and a second larger, in whose joint center the star was to be retained. To make these rings visible to the eye in the dark, I proposed to use a luminous powder. My problem was therefore to arrange this upon a glass plate, polished on two sides, and to fasten this plate in the ocular. The production of these rings caused some difficulties in regard to the exact forms, as well as uniform lighting, but after constructing a rotating machine, which enabled the rings to be produced in even thickness and with sharp edges, I succeeded finally in making luminous micrometer rings satisfactory to the requirements, and which might also be suited to other uses in astronomical measurements.

(*To be continued.*)

LOVE IN THE DARK ROOM.

One summer while outing, as sportsmen all say,
  I lingered quite long on a farm;
The board it was low and the grub very good,
  And my life I enjoyed to a charm.
Took pictures all day in the sun's brilliant ray,
  And at eve to the dark room I went;
But the fun in the daylight
Was naught to the red light
  That fell on a time so well spent.

The plates in large orders excited the boarders,
  All scenes and all faces about,
Were "took and retook" till they grew somewhat tame,
  And my lens it was fast wearing out.
My "negs" weren't half washed, so hurried was I
  To develop in this novel way,
For the fun in the daylight
Was naught to the red light
  That fell on a process so gay.

There's a secret in science productive of sport
I've proven beyond any doubt,
But I trust you may ever be greatly more clever
Than I in finding it out.
Lest perchance you don't know, I'll endeavor to show
How guileless some young men can be,
When fun in the red light
Exceedeth the daylight
Which shone on poor innocent me.

A dark closet I made in a chamber above,
And a ruby light well improvised,
And a sweet pretty girl with a white apron on
Always stood just close by my side.
Her love for the art in time grew as strong
As my fondness in having her there,
And love in the red light
Got ahead of the daylight,
While her "pa" watched not on the stair.

But an end came to this, whatever the bliss,
For the ruby light fell on the floor,
The door stood ajar and right in it her pa,
While the white light covered us o'er.
And worse still than all, my pyro-stained fist
Its imprint her apron still bears,
For the drop of the red light
Disclosing the white light,
Found me kicked to the foot of the stairs.

Pyrostain.

ON PHOTO-MICROGRAPHY.

BY W. H. WALMSLEY.

(*Continued.*)

Thus far the camera; a few brief remarks as to the microscope may not be amiss. Any stand, monocular or binocular, the body of which can be inclined to a horizontal position, may be employed. In using a binocular stand it is merely necessary to withdraw the prism sufficiently to allow all the light to pass up the straight tube, and thus convert the instrument into a monocular. The eye-piece may be removed or not, as the operator desires; the former plan being the one generally adopted, and producing, so far as my own experience goes, the better results. If the eye-piece is not used, the tube must be lined with some non-reflecting material, as before stated. A mechanical stage is a great convenience and time-saver in centering an object upon the ground glass, but is by no means a necessity; it should, however, revolve in the optical axis of the instrument if possible. A double or triple nose-piece, carrying as many object glasses of different foci is also very desirable, especially when high powers are to be used, as an object can be quickly brought into its proper position in the field of view under a low power, when by revolving the nose-piece a higher one takes its place; and if the two are properly centered, the object will be found to occupy the same position in the new field of view.

The placing of the object on the stage of microscope, and arranging it in such a position as to cast its illuminated image upon the center of the ground glass focusing screen, are all to be done with camera closed up short, in which position the eye can readily see the image, whilst the hands reach the milled heads controlling the stage and focusing adjustments. But when the bellows are extended a foot or more, this becomes impossible, and resort to some other method of varying the focus is necessary. The plan I adopted at first, and have ever since followed, was the old, but effective, one of a strong fine cord placed in a groove turned in the periphery of the milled head controlling the fine adjustment of the microscope, and passing through hook eyes on either side of the camera to its rear, where it is held taut by a couple of small leaden weights. A very slight pull on either of these serves to change the focus in the most delicate manner, and this can be done whilst the eye is fixed upon the image on the ground glass.

I have used the term ground glass in connection with the fine focusing adjustment, but merely as a figure of speech. In reality, ground glass cannot be used for this purpose at all, as the very finest that could possibly be made is entirely too coarse to define sharply any delicate microscopic object. Its usefulness is confined to securing a full and even illumination of the field, and the arranging of the object in its proper position therein. These two essentials arrived at, we must abandon the ground surface in favor of something better adapted to giving a sharply-defined image of the magnified object. Many plans for effecting this have been published, but I shall at present notice only the two which I have used most successfully for some years. The first, which is useful for hurried work, consists in attaching to the center of the ground surface of the focusing screen, by means of Canada balsam, a disk of thin microscopic covering glass about an inch in diameter. The balsam fills up the minute inequalities in the surface of the glass made by the grinding process, and renders the circle perfectly transparent. Now, if a Ramsden positive eye-piece, or any ordinary focusing glass adjusted to the thickness of the screen, be applied to the outer side thereof, the illuminated image will be seen clearly defined in this transparent circle with the most beautiful distinctness, when the proper focus is made with the adjusting cord.

(*To be continued.*)

OUR ILLUSTRATION.

The charming little child study with which we illustrate this issue of the Bulletin, is from the studio of Mr. McMichael, of Buffalo, N. Y. This artist will be remembered by our readers as having obtained the Anthony Prize at the Buffalo Meeting of the Photographers' Association of America in 1885; and also the Prize Medal of the same association at St. Louis, 1886. The work of one who has obtained so many laurels is always worth study, and we are glad to present this example to our readers. It also speaks well of the Stanley plate and N. P. A. paper.

The Bulletin is worth its weight in gold. The illustrations are beautiful.

William B. Henry.

[*From Photographische Correspondenz.*]

PHOTO-CHEMIGRAPHY.

By Otto Sommer, *Technical Assistant in the Austrian Military-Geographical Institute.*

(Continued.)

II. The Relief Etching Process.

In this process a print upon zinc, produced by the method already described, is used, which is saturated with a greasy ink and powdered resin, and then etched. These manipulations are repeated four to seven times, according to requirements.

1. *The greasy inks and the material for the powdered resin.*

Color No. 1 consists of 4 parts brush color with 1 part medium hard varnish.

Color No. 2 consists of 120 grams white wax, 15 grams tallow, 3 grams colophony, 30 grams Castile soap, 800 grams brush color, 12 grams Venice turpentine, and 20 grams oil of lavender.

Color No. 3 consists of 120 grams white wax, 25 grams tallow, 30 grams paraffine, 700 grams brush color, 15 grams Venice turpentine, and 20 grams oil of lavender.

Resin powder No. 1 consists of 3 parts Syrian asphaltum and 1 part colophony.

Resin powder No. 2 consists of 2 parts Syrian asphaltum and 1 part colophony.

2. *The preparation of the greasy inks.*—Color No. 1. The brush color generally found in the market is mostly very stiff, and therefore has to be diluted with varnish for use. This is done by mixing upon a stone slab 4 parts color with 1 part of medium hard varnish. When sufficiently ground and fine, the color is put into a tin box for keeping.

Color No. 2. White wax, tallow and colophony are melted together, while some well-dried soap is added, in small pieces, under constant stirring, causing a rising of the liquid. After settling, color No. 1 is added, under constant stirring, and the whole mass is heated to such an extent that a match will ignite it. At this moment the pot is removed from the fire and the mass is left burning for 1 to 1½ minutes, under constant stirring with an iron rod, and then it is covered, which will extinguish the flame. After two minutes the Venice turpentine, and two minutes later the oil of lavender are added under stirring, and then the whole mass is poured into a tin box.

Color No. 3 is prepared exactly like color No. 2, wax, tallow and paraffine being melted together, after which color No. 1 is added, and then the mass is set to burn. After extinguishing the same, Venice turpentine and then oil of lavender are added, and the whole is also poured into a tin box.

3. *Preparation of mass No. 1 and No. 2 for the resin dust or powder.*—The asphaltum and colophony are melted in an iron pot under continuous stirring. The whole mass is heated now to such an extent that it can be ignited, after which it is removed from the fire and is left to burn for 1 to 1½ minutes under stirring, then the pot is covered, thus extinguishing the flame. This liquid mass is now poured slowly into a large porcelain or wooden dish filled with hot water and is left to cool, after which the pieces are taken from the water and spread upon blotting-paper to dry. These resinous pieces are first crushed as small as possible and then they are worked into a very fine powder.

4. *The etching.*—The zinc plate with the resin print is coated on the back with a thick solution of asphaltum (asphaltum dissolved in benzole). The face, the edges, and some of the open parts of the drawing are coated with diluted asphaltum to prevent unnecessary action of the acid.

Now a little of color No. 1 is taken, put upon a stone slab, and ground with a little medium hard varnish, sufficiently to be suitable for putting on a leather roller. Of the diluted color very little is now put on the roller, and with this it is distributed upon the surface of the stone. When so prepared, the zinc plate is laid upon a table, the picture is wiped with a very fine sponge, with a thin solution of gum arabic and some very fine chalk. The sponge is then squeezed out and the drawing wiped over again with the same. Color is now rolled at once upon the wet plate and this is continued until the same begins to dry. Now the roller is rolled upon the slab until the moisture received by the roller from the zinc plate has evaporated and takes up color again from the stone. But the zinc plate is sprinkled with a little water and wiped with the squeegee, the remaining color-tone disappearing from the planium at once, giving the drawing a somewhat blackened appearance. The charging with color is now repeated in the same manner as the first time, three to four times in succession, after which the drawing has a completely black appearance. The gum arabic is now removed from the plate with a sponge and the plate is left to dry; the application of a little heat will do no harm. The plate is now covered with a quantity of rosin powder No. 1, which is spread with a brush, thus saturating the greasy lines of the drawing with powder. The superfluous powder is removed with a cotton tuft until the planium appears completely clean. This plate so prepared, without previous heating, is now placed in a diluted nitric acid solution, 1 to 50, and etched, according to fineness of picture, three to four minutes under continued swinging of the dish. After this it is rinsed with water, dried and heated from below until the color is thoroughly mixed with the rosin powder and has run over the edges of the already somewhat relief lines. This is recognized by the gloss of the lines, or, better, by the appearance of the drawing, which seems to be much finer than before heating. The whole process is repeated in the same order a second time, also with application of color No. 1 and powder No. 1; but this time the quantity of the color is increased, and also the acid, to 1 to 40, and the time of etching is prolonged almost double. For the still following etchings, color No. 2 and rosin powder No. 2 are to be used. Before each repetition of charging with color, the quantity of the varnish for diluting is reduced a little and more is put on the roller, as the dense parts of the drawing must be covered more and more with color and rosin powder after each etching, until at last the whole picture, with the exception of the widest parts of the drawing, are covered. The acid for the third etching is 1 to 30, and the time of etching one-half longer than the second time. The acid for the fourth etching is 1 to 20, and the time of etching again one-half longer than the third time. For the still following etchings the acid is increased to 1 to 15; more concentrated it cannot be used, as otherwise the zinc plate will become heated in the same. But the time of etching may be increased each time.

How often this whole process is to be repeated depends upon the drawing. If less high lights, that is parts without lines, etching four times is sufficient; but if it should be the contrary, six times, and sometimes even seven times etching, is necessary, as the broad parts without lines have to be laid very deep to prevent covering with color. After finishing the etching, the plate is cleaned from the color-coating with a brush and a mixture of two parts of oil of turpentine and one part of benzole, and polished finally with alcohol and chalk. The sides of the lines now show gradations, caused by repeated etchings. These give the etching a disagreeable appearance and are not very advantageous for the print. For that reason the surface of the etching is blackened with a very fine leather roller and color No. 1, which this time is mixed with very little varnish, so that the color upon the lines reaches to the first gradation.

After that, they are saturated with powder No. 1, the surplus is removed carefully, and the plate is heated so strong that the color melts completely with the resin powder. The plate is now etched in an acid of 1 to 30, for four or five minutes, under constant sweeping with a brush over the picture surface. The gradations on the lines mentioned before disappear under this treatment, and appear again, after repeated cleaning of the plate, in conic form, pure and sharp. Such a relief etching, when cut out with a saw and tacked on a wooden block, is suitable for book printing.

III. The Intaglio Process.

A shellac picture upon zinc, produced after the already described method, is etched for about two minutes in diluted nitric acid, 1 to 50. The lines of the drawing of course do not yet obtain sufficient depth to hold color enough for printing. An etching, as would be generally required, cannot be used, as the fine lines would become too broad. The plate, after the first weak etching, but without removing the shellac picture, is therefore dusted with colophony. This weak coating is left to melt on to the plate. Hereafter etching again for two to three minutes in the same acid, the lines in their depths obtain a granular rough structure, and therefore obtain the property of taking up sufficient color for printing. *Translated by* H. D.

NEW MEANS OF ESTIMATING THE ACTINISM OF THE SOLAR RAYS.

At the last meeting of the Academy of Science, M. Pasteur presented, on behalf of M. E. Duclaux, the results of some experiments made by the latter with the view of discovering a method of measuring the actinic intensity of solar light.

M. Duclaux thought that use might be made of the property possessed by oxalic acid of becoming converted by light into carbonic acid. The extent of this combustion should indicate the amount of actinic action in a given time. The verification is easily accomplished by titration of the liquid with chalk. It remains, however, to be decided whether the sensibility of the oxalic acid bath, which, although found in a very dilute solution—three grams to a liter of water—can be prepared so as to have the same sensitiveness under all circumstances; thus a solution of this kind kept in darkness for a month is more sensitive than one freshly prepared. Duclaux says, however, that it is not difficult to prepare solutions of equal sensitiveness. The method of performing the experiment deserves close examination. It is necessary to work with a vessel exposed the whole day long, and not by exposing fresh portions of the mother liquor, for example, hour by hour; the results in the two cases not being the same. It appears that there exists something like a "dead point" which the light has to overcome, and this rupture of inertia repeated a certain number of times would be the cause of an erroneous calculation. Further, in this, as in everything, it is necessary to establish indentical bases for all the operations wherever performed, if it is required that rigorous scientific value is to be achieved.—Leon Vidal in *Photographic News*.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, DECEMBER 14, 1886.

THE meeting was called to order at 8.10 P.M., *President* BEACH in the chair.

Mr. J. W. CHAMPNEY acted as Secretary *pro tem.*

The synopsis of the minutes of the last meeting was read and adopted.

The following communications were then read:

[Letter to John T. Granger, Chairman on the Society Album Committee.]

841 BROADWAY, COR. 13TH STREET,
NEW YORK, November 29, 1886.

Mr. JOHN T. GRANGER.

DEAR SIR,—As we are anxious to cultivate the acquaintence of the members of the Society of Amateur Photographers, we extend to them, through you, a cordial invitation to call on us and have a sitting made, free of charge.

Trusting this may be a matter of interest to you, We remain, yours truly,

PACH BROS.

PHILADELPHIA, PA., December 7, 1886.

F. C. BEACH, Esq.,
President of New York Photographic Society.

DEAR SIR,—I hope you will pardon the liberty I take in addressing you. I wish to present to the Photographic Society which you have the honor of being President of, two photographs, one of the tower of our new City Hall, and the other an interior of a church. Both made on Carbutt's slow special No. 20 emulsion, Zeutmeyer lens.

Should your society consider them worthy of a place amongst their valuable collection, I would feel honored by their acceptance (provided it would not be imposing too much on your good nature).

I remain, yours respectfully,

JAMES MONAGHAN.

The following reports were then read, adopted, and ordered to be placed on file.

REPORT OF THE COMMITTEE ON SOCIETY'S PORTRAIT ALBUM.

NEW YORK, December 11, 1886.

The Committee on Society's Portrait Album reports receipt of photographs from the following members: Messrs. Granger, Hull, Dr. M. L. King, Wright, Dickerson, Dumont, Harper, Roosevelt, G. H. Read, D. P. Read, Canfield, Rich and Champney, and urges upon the other members of the society a prompt compliance with the request of the committee, in order that the album may be prepared for exhibition at as early a date as possibles

J. T. GRANGER,
Chairman of Committee.

REPORT OF THE LANTERN SLIDE COMMITTEE.

NEW YORK, December 14, 1886.

During the past year this society joined the Amateur Photographic Society of Philadelphia, Pittsburgh, Cincinnati, and Boston in an interchange of lantern slides, which resulted in exhibitions before each society of a large number of interesting slides.

At the suggestion of Mr. George Bullock, President of the Cincinnati Society, the Camera Club of London promised to send 200 slides to this country in exchange for an equal number of American slides. The New York Society was chosen to select the slides contributed by the American Societies, which were apportioned as follows: New York, 70; Philadelphia, 50; Cincinnati, 40; Pittsburgh, 20; Boston, 20.

The 200 slides thus selected were sent to

England on November 19th, and about the same time 200 slides, the work of English amateurs, were received from the Camera Club of London, a few of which were recently exhibited at Association Hall.

The English slides will now be exhibited in turn by each of the contributing societies, and will then be distributed among them *pro rata*.

Desiring to continue the interchange of slides another year, your committee, assisted by Mr. Bullock, drew up the following circular, which has been sent to the chief amateur photographic societies of this country. [See page 12.]

It is hoped the members of this society will interest themselves in lantern-slide making, and either loan or donate some of their best work to the society, for the purposes mentioned in the circular.

Your committee is also desirous of increasing the collection of slides belonging to the society, thus forming a stock from which members may draw for their own private exhibitions. Those who are unable to contribute slides for this purpose are asked to loan any interesting negatives they may have, and the committee will undertake to make slides from them.

The next exhibition of lantern slides will be given on December 29th, when 100 of the English slides will be exhibited, together with any others that may be sent in by members and approved by the committee.

It is desired that fifteen or twenty members contribute five or more new slides before the middle of January next, in order that the quota of 100 of this society for next year may be made up with as little delay as possibie.

Respectfully submitted.

RICHARD H. LAWRENCE,
Chairman.

REPORT OF COMMITTEE ON JOINT EXHIBITIONS.

NEW YORK, December 14, 1886.

The Committee on Joint Exhibitions would report that they have secured the refusal for a few days of the Ortgies Gallery on Broadway, near 14th street, for the week March 26–April 2, 1887, and if the arrangement meets the approval of the Board, the exhibition will in all probability be held at the time and place named. A final decision will be reached this week.

Respectfully submitted.

C. W. CANFIELD,
Chairman.

REPORT OF THE LIBRARIAN.

NEW YORK, December 14, 1886.

Since the meeting of November 9, 1886, there has been presented to the society by John Carbutt, of Philadelpia, Pa., one 8 x 10 window transparency, on his new ground glass, also one lantern slide. By James Monaghan, of Philadelphia, Pa., two 14 x 18 photographs, one of the tower of the new Philadelphia municipal building, the other an interior of St. Agatha's Roman Catholic Church, Philadelphia, Pa.

There has been acquired for the library a book entitled "A Treatise on Paper," by Richard Parkinson, 1886.

ROBERT BAKER,
Librarian.

Messrs. Thomas T. Eckert, Jr., Dr. Robert M. Fuller, and Edward R. Schedler were then announced as having been elected active members of the society, and Frederick T. Bontecul as an associate member.

The *President* stated that Mr. Charles K. Alley had resigned as a corresponding member, and also that Mr. Frank G. DuBois had resigned as a Director; also that Mr. Joseph S. Rich had been elected to fill the vacancy. Dr. P. H. Mason had withdrawn from the chairmanship of the Lantern Slide Committee, and Mr. R. H. Lawrence had been appointed in his place.

He further remarked that a photographer would be in the operating room every day during the week, and on Monday, Tuesday, Wednesday and Friday evening. He would assist members and do printing.

The result of the entertainment which took place on November 18th, was announced to be the addition of $76 to the treasury.

The *President*—I would also state that we are having several new lockers erected upstairs for the convenience of members; also a second dark room constructed for silvering and for enlarging purposes, adjoining the present one.

It now gives me pleasure to introduce to you this evening Dr. J. West Roosevelt, who has kindly consented to show an apparatus for micro-photography.

Dr. ROOSEVELT—I do not know that the subject which I am going to introduce tonight will be particularly interesting to you. It has a great deal of practical bearing at present on some scientific matters.

[For Dr. Roosevelt's paper, see next BULLETIN.]

Mr. JOSEPH BEACH—I wish to ask whether

the thickness of the glass on which the specimen is placed makes any difference.

Dr. ROOSEVELT—It makes only the difference of losing light and that is all. Every portion of the glass the light has to go through it cuts off so much of it. The glass slide, however, ought to be a perfect glass. That is, there should not be any bubbles or gross imperfections in it, otherwise there would be a blurred image.

[During Dr. Roosevelt's remarks, he lighted the lamp and showed the practical operation of the apparatus. When he closed the lights were lowered and the ground glass of the camera was faced towards the audience, who observed the pretty effects and colors of different specimens when put in the instrument, as they appeared on the ground glass.]

The *President* then introduced Professor Spencer B. Newbury, of Cornell University, remarking that he was quite an enthusiast in investigating chemical reactions relating to photography, and was also an enthusiastic amateur.

Prof. NEWBURY proceeded to read a paper on "Unboiled Emulsions" [see last BULLETIN], which was well received.

At its close the following discussion took place.

Mr. ROOSEVELT—It would encourage some of us very much in making the emulsion if Professor Newbury would put his measures in English instead of French, and if he will kindly do so in his paper it will aid us a great deal.

Prof. NEWBURY—In the paper which I published, I believe the English equivalents were given in parentheses. I am in favor of the French measures, and I use them instead of the English. If you depend on English measures you will ascertain that they are not exactly accurate. The equivalents between the fluid measure and weight are always a little indistinct, and unless one has very perfect knowledge of the matter it is very apt to lead to confusion, so I give the French measure in the text and the English in parentheses.

Mr. NEWTON—Have you ever boiled collodion emulsion to increase its sensitiveness?

Prof. NEWBURY—No, sir; I have never attempted that. I apprehend there would be some practical difficulties in the way there.

Mr. NEWTON—I have tried the boiling of collodion emulsion to make it more sensitive.

Prof. NEWBURY—Have you?

Mr. NEWTON—Yes.

Prof. NEWBURY—What was the result?

Mr. NEWTON—No perceptible increase in the sensitiveness.

Mr. JOSEPH BEACH—The ordinary greenhorn would think from hearing this and reading that, that it was all done in open daylight. It is done in ruby light.

Prof. NEWBURY—Yes, in ruby light. I have in my dark room two panes of ordinary ruby glass which were bought down town (I think 14 x 20) and there is light enough in that dark room to read fine print in the darkest corner of the room.

Mr. NEWTON—Have you tried iodine in combination with bromide?

Prof. NEWBURY—Yes, but it has no effect whatever on the unboiled emulsion.

Mr. ROOSEVELT—Is there any special thing to be observed in flowing the plates, or do you do it as you would varnish.

Prof. NEWBURY—I do it as you would with varnish. If the emulsion is made with the right degree of fluidity, and it contains ten per cent. of alcohol, you can take your plate like this [indicating] and flow on it to double the amount of emulsion and flow off about one-half, and keep that on until it evens, and you can keep on that way until it is all used up; twenty ounces of emulsion made as I have stated, will coat four dozen 8 x 10 plates with ease. That, of course, brings down the cost to a comparatively small figure. The glass is three times as costly as the emulsion.

At the close of the discussion, the President stated that the subject of "Defects in Dry Plates," left over from the last meeting, would next be considered, and called on Dr. Janeway.

Dr. JANEWAY—*Mr. President:* At the previous meeting we started a discussion on the questions presented by Mr. Roosevelt, one of our members, who produced for the Question Box Committee a couple of plates which presented very peculiar appearances, and the committee answered his questions as well as they could, and they will again endeavor to start a discussion on the different questions.

Mr. Roosevelt has kindly started the committee again. In his note he says "More idiosyncracies of dry plates. There was neither storm, dust, nor hail when taken, and other plates developed in the same pan were not measly."

I will pass these two plates around, because I think the committee will be unable to answer all the questions that might be started from this one, and get the sense of the society a little later.

There was one question (I haven't the questions with me to-night), it was rather a dual question, which Mr. Roosevelt asked us, as to the causes of pin-holes, and also larger spots that sometimes appeared. The Chairman of the Question Box Committee was inclined to think that the spots are oftentimes caused by dust in improperly dusting the plates, and not taking care of the plates previous to putting them in the developer, and also that the maker was at fault.

In looking up the subject since then, I found that it is a growing opinion among amateurs that it is not so much dust that accumulates on the plates that causes these pin-holes, as it is an impurity in the emulsion placed on it by the maker. Either the emulsion itself becomes disorganized by some fermentive action; or the plate itself is not properly cleaned, and the emulsion does not stick fast uniformly; or does not dry uniformly on the whole glass surface.

In regard to the larger spots that are sometimes seen on plates, some people have advanced the idea that these spots are caused by a small particle of pyro not being thoroughly dissolved: or, rather, being in an undissolved condition. That may be so; and sometimes is so. I have seen it occur by my own carelessness. But the great cause of these spots, sometimes of the size of a split pea, or sometimes as large as a split Lima bean, or even larger than that, is caused, I think, by the using of impure water in making the gelatine emulsion.

There is a story told not many years ago of a photographer who had never worked in the dry plate business, and a friend of his was recommending it very highly; but the photographer was located in a place where there was limited transportation and he could not get his dry plates very handily or economically. He concluded that he would go down and visit his friend and learn the manufacture of the emulsion and preparing the plates. He went down, and after devoting himself very diligently for over three weeks with his friend, he got to making the emulsion and coating his plates and getting very good results. Very much delighted, he finally took the materials home with him in order to make the emulsion there; but he found, to his surprise, although he followed exactly the directions that he had been taught, that every one of his plates were spoiled in being developed. He wrote to his friend and asked the cause of it; his friend suggested one thing and another as the cause. His friend at last went up to see him to see what the trouble was; he also made a batch of emulsion and coated some plates and his plates were spoiled too. He said "there must be some sulphur about it," and in looking around found that the water which was used in the emulsion came through a new india rubber hose from a cistern some distance off. Tests were made for the sulphur, which was found. Therefore I think that the makers are very often to blame for the wretchedly large spots in the plates.

In regard to that big plate that was shown here—the striations upon it—I have seen one other plate very similar to it, so much so that it might be called its "twin brother," and by careful inquiry, and in a mild detective way, I found out that they were in the habit in this factory when they got too much emulsion on their plates, and when they did not set fast enough, to run over a "straight-edge," as it is termed, which is some six or seven feet long, and a striation resulted. When the gentleman presented that plate I told him that I believed I could tell the maker of the plate. I found that I was correct, because it was in the same mill in which this straight-edge was used.

In regard to pin-holes again, I have had an experience since that meeting. My son spent part of last summer in Michigan in the mines, and he took a number of very beautiful views, but he had not time himself to develop them, and asked me to develop them for him, which I very cheerfully did. When I came down to the last double holder there were two plates of the same group in it. They were out of the same box, and they were the last two plates in the box, the same group exactly, the same time of exposure, the same light—as fast as the holder could be turned and the slide drawn and the lens uncapped. From the first plate in this holder I obtained a remarkably fine negative. Everything came out in as perfect detail as you would want. Then I took the other plate on the opposite of the holder, and after I had drawn it from the holder and blow over it, as I always do, I thought of a remark that was made by one of the society that night, viz., that the pin-holes were often in the plate before it went into the holder. I held the plate up to the light, and to my surprise and astonishment it looked more like a fine colendar than anything else. I thought that there might be some dust upon it, and I washed it over carefully, knowing that in a ruby light sometimes some mineral dusts oftentimes present an appearance like clear glass. I washed it after soaking it, but still the holes were there, but no dust. I attempted to develop it. In a little while there was nothing to be seen, but it gradually built up, and I could detect the features of the group, the eyes and nostrils and mouths, etc., of the group. Then the development stopped. It came to a stand-still, and I thought I would increase the strength of the developer, which I did, but it did not go any further, and presently it began to veil over. I took it out of the developer without being able to detect anything. As I looked on the film side by reflected light, I saw as beautiful a metallic deposit on that plate as I have seen anywhere. I fixed the plate, and washed and looked at it again, but there was no picture on the plate. There were only small daubs and something that looked more like the nebulæ in the Milky Way to be seen with a strong telescope than anything else. There was no picture there, but still I had that beautiful metallic luster all over the film side of the plate. There is no doubt but that in that emulsion there was an impure nitrate of silver used, and the sulphite of soda in the developer produced the sulphide of silver on the plate, and thus we had the metallic luster which destroyed the image and everything else.

The question is asked me in regard to this plate why it was that the other plates were not the same. I will state that this particular plate was considerably thicker than any of the other plates in the same box, indicating, perhaps, that it was made from a different emulsion.

The *President*—We would like to hear from Mr. Roosevelt.

Mr. ROOSEVELT—I spoke the other evening, and I have had no further experience, except with two plates that I sent here.

I have, in my unfortunate career, discovered four species of spots; one, I suppose they call it a "pin-hole," though I do not know what a pin-hole is, but it looks like a pin-hole. And also a smaller spot, very slightly visible throughout the plate. Then there is either a dark or a white change in the color of the emulsion, not leaving the glass bare, but making a thin spot in the print. Then came these last that I sent here, that I never met with before. They look like crystals. They print very strongly, so that if you look at the picture you will find the lower part of it is covered almost entirely with curious angular formations.

As to the effect of dry pyro undissolved, I have watched my developer carefully since reference to that, but it has only been in the last three or four months that I have used dry pyro; and, as to dust, I have taken the ordinary course recommended by the books, of cleaning the plate before I put it in the holder, but after what Dr. Janeway said at a former meeting, I have been in the habit of dusting the plates before I developed them and not before putting them in the holder, but keeping the holder very clean, and I think I have gained something.

Mr. WALKER—He should look at his plate before he dusts it.

Mr. ROOSEVELT—I shall do that; that is a new suggestion that I got at the last meeting.

Mr. JOSEPH P. BEACH—*Mr. President:* I have had a little experience in regard to this, very different from any I have ever heard spoken of in this room. You remember the Bartholdi excursion which we all had. For the first time in my life I used Stanley plates on that occasion, with an ordinary detective camera, and when we first arrived on the ground down there we had some pretty good light, and I got a very nice view of the north side of the statue. In developing the plates, and after printing, I found that I had excellent views of a setting sun on one side. In developing this plate I noticed constantly, in three or four places, a depression in the film; that is, the gelatine would seem to be pressed as though there was, perhaps, a little spot or something of that kind. I thought perhaps that a hard pellet of some kind was the reason. However, we went along and developed the plate and printed some copies, in which there were those beautiful defects of a setting sun in that plate. The other plate did not develop into clear glass, but it left a black shade around a transparent spot. I have never had anything of the kind before.

On another occasion I remember in putting in the plates (and these plates were probably from the maker that Dr. Janeway was speaking about. I do not think that in any of the Stanley plates I have found any spots but one or two). In this other lot of plates the development went on the same, everything as nice as it possibly could be. I have an arrangement for the alum water and also for the hypo, where I can look through without taking out the plate or handling it. I have two sheets of glass fastened in an upright frame of wood (that frame was soaked in paraffine). In this apparatus I can always see the effect that is going on. Well, I had developed some of this lot of plates and had got to the hypo; they were all developed except the last batch; all the rest were as beautiful as could be, and there was nothing the matter. I put the last batch in alum water. Presently, about the middle of the plate there began to form a little hole, which grew larger. I have the pictures down at my room. I did not bring them up to-night.

Then there appeared another hole, which was perhaps a little larger than the split pea that has been spoken of here this evening. There were three of them. One of them happened to be on the edge of the waterfall. The next picture that I put in developed beautifully, there was nothing the matter with it, and, indeed, anybody would say, "that is coming out all right," so I put that in an alum bath. Almost, in the line of those holes in the first picture, came similar holes in the second picture, only more pronounced. (This was a picture of a couple of horses.) The other picture represented a waterfall that was taken instantaneously. After the holes appeared on a second plate, I thought to myself if we develop any more, we will not put them in the alum bath. These two were bad failures, the remainder, that I did not put in the alum bath, were all right. I think, since Dr. Janeway spoke to-night, that those plates were improperly coated or there was something in that alum water. To complete the story, we had three or four other plates, but they did not have any spots in them or any holes in them. But these spots that I have spoken of were not ordinary spots. They simply wore out, the edges sticking firmly to the glass.

Mr. Roosevelt—I never put the Stanley plates in alum, and I do not think they need it. I say "never"—rarely ever.

Mr. Walrer—*Mr. President:* I want to say a word upon this subject. If these defects can be detected by us before we put the plate in the plate holder; if we hold the plate up to the light as I have frequently done, and examine it before putting it in the holder and there detect these faults, they can also be detected by the sellers of the plates. They have the same facilities we have ; their opportunities are far superior to ours in that regard; and there is no reason why every plate that we get from them should not be carefully examined before put in a box for sale. It would, of course, involve additional cost for the seller, but his profits are large enough to enable him to do it, and if they did that, which I maintain it is their duty to do, we would at least be saved the trouble and annoyance of having to exhibit and use bad plates and pay for them besides, when the remedy lies with the seller at the time he puts them in the boxes. Now there may be reasons why this cannot be done, but to me they are unknown. I have done it myself, as I said, and I have a box filled with plates which I examined before I put them in the holder, and there will be found upon each of them from three to fifty pin-holes and other distinct imperfections. Of course I did not put those in the holder and I never used them. I think these difficulties should be remedied by the manufacturers of the plates. They are not for us to remedy. We cannnt find the reason of the existence of pin-holes and never will know, and no two men will agree on the cause. The holes can however be detected when the plates are put in the box. I know that since we have agitated these questions there has been a marked improvement in the manufacture of plates, and we have been able to see it, but still there is room for greater improvement, and all I desire to impress upon my hearers is that we must look to the dealers to remedy these difficulties, because I think it is within their power to do it, and we call on them now and here to do it in a friendly spirit toward us amateurs, who are their largest clients.

Is it a proper thing, in your judgment, for the manufacturers to take our money for thousands of imperfect plates, where faults can be remedied by any reasonable means or expense?

Some people will say it will hurt a plate by holding it up to the light, but I do not think it is so. If you put it up for the purpose of examining for pin-holes, it is better to run the risk of that, than to run the risk of losing a picture altogether.

Mr. Joseph P. Beach—A photographer whom I have seen present (a lady) says she takes flour of pumice stone and rubs it on a finger over the film, and then uses the ordinary lead pencil for touching out the pin-holes.

Mr. Roosevelt—I have tried it, sir. I have to add to my previous remarks, that I consulted a photographer in regard to the matter of pin-holes, and he says that in the Fall the plates were generally bad, and he had a great deal of trouble with pin-holes, and attributed them to bacteria, bacillæ, protoplasms and animalculæ.

Mr. Walker—We pay our money for the plates, and the makers should remove the pin-holes on the plates themselves.

Mr. Ripley—Your demand shall be respected.

Mr. Roosevelt—I did not refer to the Ripley plates.

Mr. Ripley—In connection with Mr. Walker's inquiry as to whether it is a proper thing to examine the plate before you put it in a holder, I will say that it will not hurt the plate if the proper light is used. There is a great deal of undue faith in the ruby light. Of course in slow plates a great deal of light of almost any quality can be used, but for sensitive plates the ruby glass and other ruby mediums that are sold as safe are not safe. I have found, by very careful and continued investigation, that the safest thing to use, and at the same time one which gives the most light, is a combination of what is called amber glass. It is not exactly the old orange glass that used to be used in dark rooms, but it is a sort of a brownish-yellow, and is colored off with a thickness of lemon-yellow tissue. Dennison sells it, and calls it 22, which is of the right color. The lemon-yellow tissue is absolutely safe, as I have tested it.

Mr. ROOSEVELT—I wish you would point out the defects, Mr. Ripley, that we amateurs may have committed, that are not to be laid to the plate makers, as producing those results in the picture.

Mr. RIPLEY—Well, a great many of the defects that you complain of are the faults of the plates.

A MEMBER—Or the makers?

Mr. RIPLEY—Of course the makers are responsible for them. Pin-holes are a mechanical fault in the making of the plate, and dust on the plate is the fault of the place where they are kept and dried, and streaks and lines across the plates is the fault of the plate, and consequently the fault of the maker. All those things should be looked after, and such plates should not be packed in a box. I do not do any packing myself. I cannot possibly examine the plates and make the emulsion, but I have to trust to others, and I am painfully conscious that a few of such plates have gone out with my name upon them.

(To be continued.)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—E. P. writes: Please inform me, through the BULLETIN, how many grains of gold chloride I can make with a two dollar American gold coin.

A.—We do not know of a two dollar gold coin in United States money; but nevertheless we advise him to read Dr. P. H. Mason's article upon "Another Amateur's Experience in Toning" in the BULLETIN for 1886, page 43 where very careful directions are given that are too lengthy for this column.

Q.—J. N. T. writes: To state the trouble I am in I made a closet to store my plates and sensitized paper in, and used a box in which sulphur matches had been packed. I happened to look at the sensitized paper and found that the back had a burned appearance. I would like to know if the things, such as the cards, plates and paper, which do not show the discoloration are good to use. By answering through the columns of your paper you will oblige.

A.—We should be rather afraid of anything packed in such a box; but possibly a thorough exposure to air in a moderately warm place, and afterwards a good fuming in a clean box with ammonia and another good airing in a warm place might make the materials serviceable. We should not care to mount any important prints on such cards however.

Q.—S. F. B. writes: Please inform me how to prepre the cyanide of potassium for fixing ferrotypes, as I cannot find how it should be dissolved.

A.—The cyanide of potassium fixing bath for ferrotypes is usually made by dissolving 2 ounces of the chemical in 64 ounces of water, but if it works too slowly a little more (a dram or two) may be used without any harm. Remember cyanide of potassium is extremely poisonous.

Q.—F. M. R. writes: A day or two ago I wrote an inquiry in regard to the working of my paper, and supposed I inclosed a print, but guess I did not as I have since found the one I had designed to inclose. I will again ask: The cause of the spots—bath, 65 grains slightly alkaline, floated 2½ minutes; drawn across rod and blotted dry; dried ¾ hour in cupboard with oil-stone; fumed 15 minutes and dried again, fuming box dry and warm. Some pieces from the same sheet do not show it. It has bothered me a good deal. Hope you can help me out through the BULLETIN.

A.—Your trouble is evidently imperfect fuming, partly due to having the paper not fully exposed to the fumes, and partly that the time of fuming is too short. Thirty minutes' fuming is as short a time as we have found sufficient to give good results. Why do you dry after fuming? You don't immerse your paper in ammonia, do you? We see no use in drying after fuming, unless you immerse the paper.

To the Editors of the BULLETIN.

I have been much interested in your article about ferrous oxalate development, but I have not noticed any mention of the difficulty that many amateurs, at least, have met with, viz.: the difficulty of keeping the iron solution clear.

To those of us who use their dark rooms infrequently, this is a real obstacle to the use of this developer. An accident demonstrated to me a method of keeping the iron solution from precipitating, that accomplishes the object without interfering with the specific function of the developer, that is, the use of a few grains of salicylic acid. I made a pint of iron solution last January in which were placed a few grains of this acid, and the solution is in good shape to use to-day. I presume that is an old story to many, but I know that there are a good many amateurs who would be glad to know of it. Yours truly,

THOS. W. HARVEY.

[We are glad to note this suggestion of our correspondent.—EDS.]

Views Caught with the Drop Shutter.

MESSRS. ZIMMERMAN BROTHERS send us an excellent view of the ice palace at St. Paul for 1887. It is 214 feet long, 194 feet wide, and 135 feet high, and the picture shows it to be a most beautiful structure.

S. R. STODDARD, the well known photographer, of Glen's Falls, sends us a charming little album (2½ x 4 inches) of his beautiful Lake George views, which is very beautifully interspersed with a descriptive letter-press of very artistic printing. It is a little gem, and we are very much pleased to receive it.

MR. HENRY H. RAGAN gave a lecture at Steinway Hall, New York, on December 27th last, descriptive of a tour through Spain and Morocco. We hear that it was beautifully illustrated with views by the optical lantern, and regret that other duties prevented our being present.

A FIRE in CHARLES W. SMITH'S photographic supply depot, 303 Broadway, New York, did $1,000 damage the other day.

THE following abstract of a letter from the AIR BRUSH MANUFACTURING COMPANY, of Rockford, Ill., may prove of service to some of our subscribers, and we insert it for their benefit:

ROCKFORD, ILL., December 12, 1886.

GENTLEMEN,—We would be greatly obliged if you would make brief editorial or local mention of the fact that we have established a free directory for the accommodation of air-brush artists, and parties desiring to employ such artists. We are in frequent receipt of inquiries from fine establishments offering excellent situations to first-class air-brush artists. We have supplied numbers of such inquirers, but the demand exceeds our knowledge of the supply. Hence we will act as a medium of communication for the convenience of those interested without charge to any one. It would not be amiss to mention in this connection the certainty with which the air-brush process is supplanting ordinary crayon and water-color portraits, especially on bromide or albumen paper. It's not advertising talk, but plain fact, that a young artist can't make more profitable use of his leisure than in thoroughly learning the air brush if he desires a high-priced commercial situation.

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EVENING POST JOB PRINT, N Y

THE CIDER PRESS.

BY

C. S. BRADFORD, Jr., WESTCHESTER, PA.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JANUARY 22, 1887. Vol. XVIII.—No. 2.

LIGHT FOR DEVELOPING.

THE question of the best quality of light that may be safely used in the dark room is one of vital importance to every photographer. At the very beginning of any discussion of the subject, it must not be forgotten that there is no medium yet known that will entirely prevent the action of light upon very sensitive dry plates, if they are exposed for a sufficiently long period of time to its action. What we must then aim to obtain is that light filter that will give us sufficient illumination in the dark room with the minimum of active effect in the light rays that are transmitted through it. As is well known, red light is the least effective in its action upon silver haloids, and consequently we have been taught to use ruby red glass as a filter to select out the actinic rays of our ordinary sources of light, the sun, and also artificial agents. But a very little thought will show that to be effective as a light filter, there must be a certain relation between the density of color in the glass and the source of light with which it is intended to use it. A weak illuminant like a candle may only need a glass of a moderate depth of color, while sunlight needs a very deep ruby shade to be at all safe to develop by.

This point, as to the quality of the color of the glass to be used, is particularly important, and every effort made to settle the question should be gratefully received by all photographers. At a recent meeting of the Photographic Society of Chicago, Mr. T. C. Roche, who is well known as a careful, practical photographer, exhibited a sample of smoky amber glass, which he recommended to the consideration of the society as very suitable for a light filter to develop by, and stated that this glass was being successfully used by several New York photographers. Professor Hough took the glass, tested it with the spectroscope, and condemned it as useless. This difference between a scientific man and practical work caused Mr. Roche to look into the matter on his return to New York. To test the question practically, Mr. Roche took a 5 x 8 gelatine dry plate, cut it in half, and exposed one half under ordinary ruby glass in a sensitometer with 30 degrees for ten seconds by the watch to daylight, and the other half in the same manner under the amber glass in question for the same length of time. The two halves were then developed together in the same dish. That exposed under the ruby glass shows five numbers distinctly, and others as far as No. 15, which is quite faint; while the half exposed under the amber glass does not show a trace

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of a single figure. These results being a confirmation of Mr. Roche's statement in Chicago, he sought to still further corroborate them by asking us to make a spectroscopic test of the glass. This we readily assented to, and will now state our results. The ruby glass used was of a moderately dark shade, and in front of the spectroscope showed red and some orange light quite distinctly, while light of a faint violet color was visible under careful observation; this latter would account for the result obtained with the sensitometer mentioned above. In the case of the amber glass in front of the spectroscope, red and orange rays were visible, while the yellow of the spectrum appeared to be converted into a faint chrome green. No violet or blue rays could be detected by close observation. The green color seems to be very faint and of a different shade from the spectrum green, being probably due to some constituent used in coloring the glass.

For comparison we used a piece of very dark ruby glass to see if we could cut out all the violet light, which we mentioned above as filtering through the ruby glass used by Mr. Roche. We succeeded in entirely suppressing the violet light, but the ruby light transmitted was of such a dark shade as to be very unsuitable for use in developing, objects a few feet from the light being almost invisible. The amber glass transmits much more light than an equally safe shade of ruby, while withholding all rays dangerous to gelatine dry plates, as proved by Mr. Roche's experiments mentioned above.

As another proof that the observations mentioned above are reliable, we are told by a well-known dry plate manufacturer that he is using this amber-colored glass as a safe light to manufacture his dry plates by, adding one thickness of yellow tissue as an extra precaution. He has adopted this light filter after experimenting with quite a number of others, which he has rejected as unsafe.

Altogether, we think this amber glass a better means of filtering out the chemically active rays in our sources of light than any hitherto proposed, in that it gives us greater illumination with safety.

EDITORIAL NOTES.

In our article upon "Photographic Work in Winter," which appeared in the last Bulletin, the omission of an important cause of failure in cold weather has been called to our attention by one of our readers, that is, cold water. In addition to having the developing and other solutions at normal temperatures, it is of course important that the water used to dilute them should also be at the proper temperature. We add this note to remind our readers of the care and thought that should be given to photographic work in cold weather.

It would appear that our remarks upon the above subject were not unnecessary; for we hear of three cases of difficulties with albumen paper quite recently that were undoubtedly due to inattention to the importance of having the various solutions at the same and proper temperatures. We cannot too strongly impress upon our readers the absolute necessity of having their baths at 60 to 70 degrees F., and the albumen paper at the same temperature also. Inattention to this point will most assuredly give rise to failures

We would remind our readers that the Bulletin is issued semi-monthly, and that the next number will appear on February 12th. When the long intervals come we constantly receive letters asking why the Bulletin has not been sent, our correspondents thinking that it is issued fortnightly, instead of semi-monthly. We are glad that they look out sharply for the journal, as it is an evidence that our work is appreciated, and encourages us.

Professor D. L. Elmendorf gave an exceedingly interesting lecture and exhibition of his photographs of a trip across our continent at the last meeting of the Photographic Section of the American Institute. The pictures were lantern slides made by the Professor from his own negatives, and were remarkable in showing his great skill in the production of both negatives and positives on glass of uncommon excellence. In addition to the beauty of the pictures as examples of photography, many of them were colored in a most artistic manner by the talented Professor, giving the scenes a realistic beauty that must be seen to be appreciated. An interesting method of securing the tints of the wonderfully colored Western scenes, was the collection of pieces of the rocks at the time the negatives were secured, which served as reminders of the shades of those gorgeously tinted landscapes. Those who failed to see the exhibition missed a rare opportunity of witnessing skillful photographic work combined with artistic taste of the first order.

We have before us the first number of the Proceedings of the Camera Club, of London, England. This is an effort to bring the country members of the club into closer communication with the London members, and forms a permanent record of the work of those who are active in the advancement of photographic work. A certain amount of space will be devoted to notes and queries, and also to the exchange and sale of apparatus among members. We must certainly congratulate the club upon this endeavor to keep an accurate and careful record of its work.

We are indebted to Lieutenant A. G. Winterhalter, of the United States Naval Observatory, for a copy of the Report of the Superintendent. In it we note some excellent work of the Lieutenant in making photographs of the sun at or about noon of every clear day. Of these photographs, 98 taken between January 11 and September 30, 1886, exhibit spots on the sun's surface. In future, photographs will be taken at any time between 10 a.m. and 2 p.m. Slow gelatine dry plates are used for this work, and, speaking of these, Lieutenant Winterhalter says:

The modern gelatine dry plate presents so many superiorities over any other kind of plate, that it has come into use everywhere, to the exclusion of all other kinds of plates, except for special kinds of work. It was formerly thought that in the processes of solar photography recourse would have to be had to the old wet plate process, or to collodion dry plates, such as were used at the transit of Venus. But with the present rapid advances made in every stage of the gelatine dry plate manufacture, that plate has been adopted by all leading observatories for their work, both in solar and stellar photography. It has proved itself to be entirely reliable for measures of precision and ease of development. Its heightened sensitiveness makes it for special occasions of great value, as exposures can be made with only a moment of clear sky, or with the sun, as may occur, covered with thin clouds, when the same thing would have been impossible with the old type of photographic plate.

In the last number of the *Bulletin de la Société Française de Photographie* we find some experiments by M. de Villecholles on the use of chloride of sodium (common salt) as an accelerator for gelatine plates. He uses a twelve per cent. solution of salt, and applies it as a preliminary bath before development, the result being a gain in sensitiveness of about three numbers on a Warnerke scale. M. Andra repeated the experiments of M. Villecholles, and confirms them. He used a solution of 15 grams of salt in 100 grams of water; placed the gelatine plate in it for about one minute, and then, without washing, into the ferrous oxalate developer. Two plates exhibited before the French society readily showed the difference in the effect presented by the treatment.

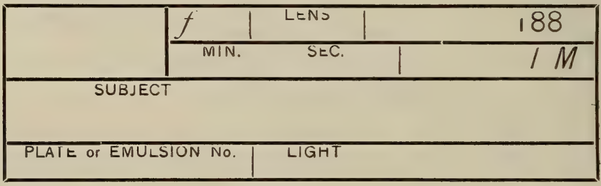
We are indebted to Mrs. Fitzgibbon-Clark, the proprietor of the *St. Louis Photographer*, for a handsomely bound copy of the numbers of her journal for the year 1886. We are very much pleased to receive this kind attention, and shall undoubtedly find the volume useful for reference.

◆

NEW FORM FOR EXPOSURE RECORD.

To the Editors of the Bulletin.

In reply to your note, I send you a sketch of the form I have found best suited to exposure memoranda. The large square in the corner is used to contain the consecutive number; *f* of course represents the focus or the stop as may be convenient. The small space for the lens is usually sufficient to contain such initials as W. A., R. R., etc., standing for wide angle and rapid rectilinear. A figure inserted here will show the focus of each lens when there are two of one kind. Following this is space for the month and year. The next line is for minutes and seconds, which can be used for instantaneous exposures, or, in fact, any time record. The time of day takes up the latter part of this second line. The mark before the M can be converted by a single stroke into P or A, representing A.M. or P.M. The wide line is devoted to the subject, which I usually write in a bold hand in order to catch the eye. The make of the plate or the number of the emulsion is put in the first part of the last line, while the record of the light occupies the remaining portion, and the remarks can extend further down the page if necessary. Made up into the form of a hand stamp, this record can be put into an ordinary memorandum book, say $3\frac{1}{4}$ wide by $5\frac{1}{2}$ inches long. Placed two upon a page, sufficient space is left for a record of the developments as suggested in my paper read before the Society of Amateur Photographers of this city.



f | LENS | 188

MIN. SEC. | / M

SUBJECT

PLATE or EMULSION No. | LIGHT

A blank for the development record might easily be devised when the person uses one form of developer, and would save considerable time in making notes. I have not attempted to devise anything of the sort as yet, because experiments have made it necessary to use widely different developers. The essential feature of such a record would be a blank for the pyro, to indicate the number of grains per ounce of developer; one for the potash; and another for the bromide, with space below for special operations.

I think it would be a very desirable thing for amateur photographers if the publishers of the BULLETIN would either prepare blank books in this form, or provide rubber hand stamps by which any blank book could be converted into a recording book at an expenditure of a few minutes' time. The latter plan would be advantageous, because it would enable each one to use such a form of book as suited his requirements. As I explain in my paper read before the society, the consecutive number is put in only when a plate is put in the holder, the plate being marked with a similar number in lead-pencil, or with a number pasted on the margin.

If the publishers of the BULLETIN would issue a series of perforated and gummed numbers especially adapted to the margins of plates, it would be an aid to amateurs. The figures should be short and "extended," as printers term it. The top and bottom margins ought to be very small, and, for the sake of greatest clearness in the red light of the dark room, the ink should be blue. This color appears blacker by red light than black ink. W. E. PARTRIDGE.

EXHIBITION OF THE PHOTOGRAPHIC SOCIETIES OF NEW YORK, PHILADELPHIA, AND BOSTON.

THE first annual exhibition of the combined work of the Photographic Society of Philadelphia, the Boston Camera Club, and the Society of Amateur Photographers of New York, including also exhibits from prominent American and European amateurs and professionals, will be held under the auspices of the Society of Amateur Photographers of New York, March 26 to April 2, 1887, at the Ortgies gallery, 845 Broadway, near 14th street, New York.

The exhibition will be inaugurated on Saturday evening, March 26th, at 8 P.M., by a private view, open to members and their friends.

The exhibition will remain open daily, from 10 A.M. to 5 P.M., and 7 P.M. to 10 P.M., during the following week, closing Saturday afternoon, April 2d.

All pictures must be sent, charges prepaid, to the Society of Amateur Photographers of New York, 122 West 36th street, New York, indorsed "For Annual Exhibition," and delivered before 9 P.M., Saturday evening, March 19, 1887.

No pictures can be received at the gallery.

All correspondence must be addressed to C. W. Canfield, Chairman, 122 West 36th street, New York.

Entry forms will be ready for distribution to applicants from abroad on February 1st, and to applicants in this country, March 1st.

The exhibition is open and unrestricted, except as noted in the Rules. Amateurs and professionals are alike at liberty to compete, although the judges will be instructed to give the preference, other things being equal, to work entirely done by the exhibitor.

The names of the judges will be announced hereafter.

As the space at the disposal of the committee, while ample for an ordinary exhibition, is still more restricted than they could wish, it is respectfully suggested to intending exhibitors that they aim rather to send a few choice examples of their work, than a large number of specimens of only average merit.

Committee of Arrangements.—C. W. CANFIELD, *Chairman;* F. C. BEACH, JOHN T. GRANGER, ROBERT S. REDFIELD, GEORGE E. CABOT.

THE TREE CAKE.

We have to thank the Director of the great manufactory of the N. P. A. paper for the elegant Tree Cake he has sent us, by way of emphasizing the "compliments of the season." There are only two of these cakes made—one for us and one for the Royal Family.

They are of cylindrical form, being built around a circular hole, similar to the way in which cannon are cast around a hole in the earth. They are about two feet high and fifteen inches in diameter, including the width of the hole. There are projections all over the outside, representing the stumps of the branches, each stump being tipped with icing. This keeps it cool, and makes it remain fresh until eaten.

It is a delicious cake, and we always look for its usual Christmas advent with delightful anticipations.

COMPOSITION IN PHOTOGRAPHIC PICTURES.

BY J. WELLS CHAMPNEY.

[Address before the Society of Amateur Photographers of New York.]

The question of composition is one that concerns the amateur photographer the moment he first directs his lens towards any scene in nature.

He may not, it is true, be permitted, as the professional artist, to introduce clouds at will, to lop off trees to suit his ideal, or to elevate mountains. He must accept the present scene with its special lighting and arrangement; picturesque it may be, or painfully common-place. The common-place commends itself often for other than pictorial charms, and the amateur must not ignore these.

To-night, however, I wish to consider whether there may not be some principles of composition, exemplified by pictures thrown upon the screen, which can be clearly stated.

These principles faithfully followed can aid in raising photography to recognition as an art, and the amateur photographer, by the intelligent use of the camera, may produce results which shall rank well with the master-pieces of landscape. He has the right of choice, and by his exercise of that right shows how far he is gifted in an artistic sense.

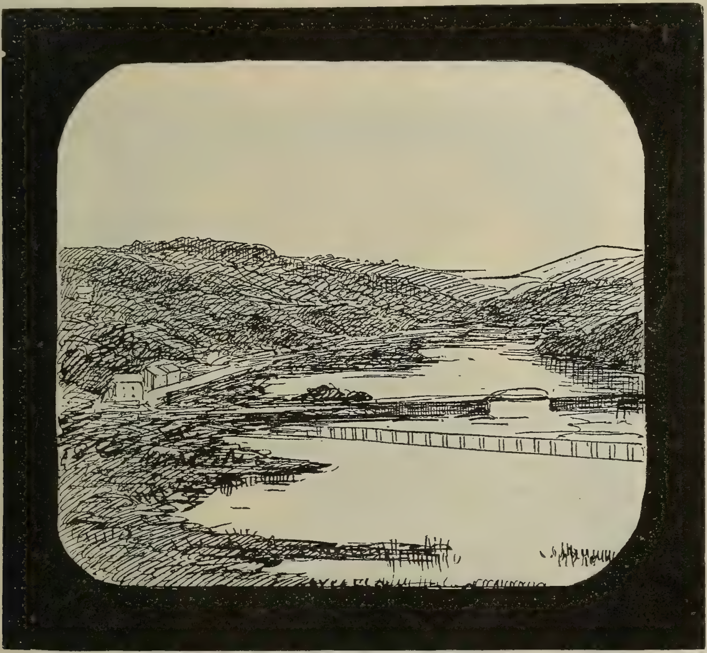
It has always seemed to me that too much attention has been given to considering what may not be, rather than to profiting by what we have.

One of the principal points I wish to make to-night is, the need for a wiser choice in the shapes of our pictures, and, to make the argument clear to your eyes, and through them to your minds, I have prepared mats for a dozen transparencies, and will throw the picture upon the screen as it has already been shown here and then cut off such parts of it as seem to me foreign to the full enjoyment of the subject. This will be very likely to lead, as I wish it to, to an argument, one side of which I shall be ready to support. So far as I know, this subject has not received much attention, and our lantern slides are generally made as large as the plate will permit. I hold that if the part of the subject that is really of interest should be no larger than a dime, all the rest of the plate had best be covered with opaque paper, that we may fully enjoy it; that the relation of subject to the shape of the opening through which it is supposed to be seen, whether circle, or oval, triangular or parallelogram, should receive the careful attention of all.

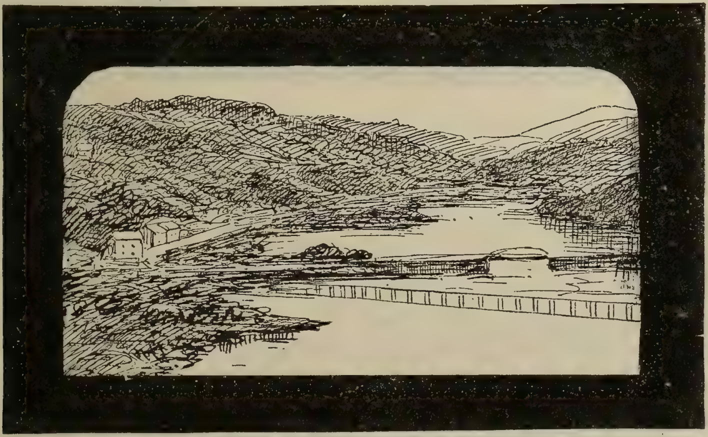
* * * * * * * *

Following the reading of his remarks, Mr. Champney spoke substantially as follows, while the pictures were being exhibited on the screen.

Doubtless these various points that I want to make to-night are open to discussion, and though I use one shape you might very readily say that it would be more advantageous to use another; but in my efforts this evening there shall be shown a general purpose in each of the shapes of these mats, and I think I can give reasons for altering the shapes of the various pictures which I propose to show upon the screen.



[Mr. Champney then threw a mountain-lake scene upon the screen.]



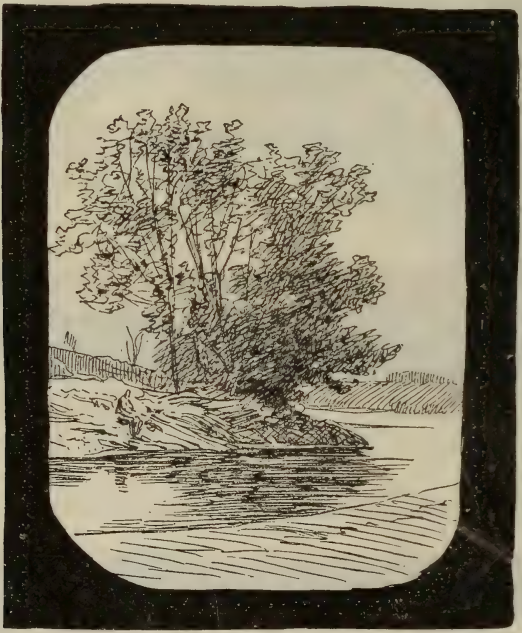
That then is the view as it is mounted. It is on a 3¼ x 4 slide (regulation size). It is certainly a very beautiful photograph, and has everything to commend it, except it seems to me we are in doubt whether to look up or down.

The repetition of the form in the reflection, however clear and beautiful, is to me less interesting than the mountain. The reason is that there is an unpleasant confusion of things.

[Mr. Champney then changed the picture as shown on preceding page.]

Now I will place a mat over this [indicating]. There is a special object for cutting off this sky. I hold that a mat which cuts the sky in that way [indicating] lets you see and enjoy the beautiful gradations of the photograph far better than you could with the area of white in your eye.

That dark line above gives the mountains, by contrast, an ærial quality they did not possess before. I have already altered the foreground, because we want to give in such a picture as that the idea that we are looking from a height. When looking from a height downwards, you are interested, as a rule, more in the various forms of the earth than you are in the sky, and whatever reason an artist might have to make this change, a photographer has a double reason, because, as a general rule, in his pictures the skies are perfectly white.

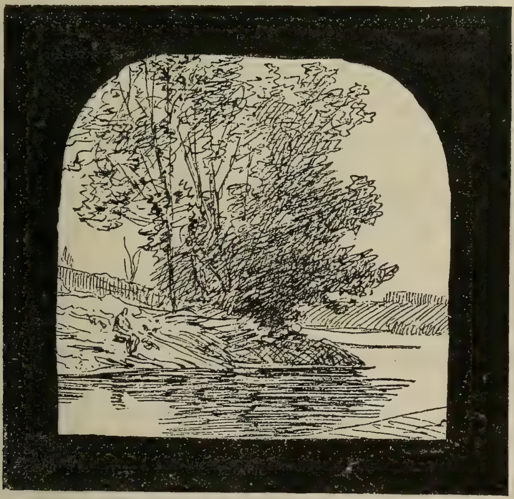


The point I wish to make in this special picture is the change necessary in all our pictures where so large a portion is white sky. It was not my purpose in showing this to make it a perfect composition, but simply to call attention to the delicacy that is brought to our eyes in the backgrounds of such pictures by having near them the clearly defined dark line.

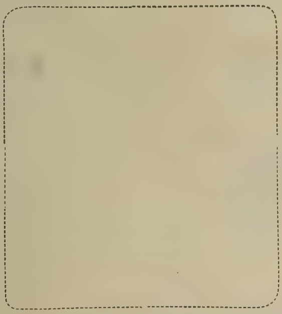
Now in that [referring to another picture of a cabin scene with little children present] it is merely a question of cutting off your foreground. Losing a little above and a great deal below, gives you an interest in the picture that you had not before. The whole object of making these mats is that we should present on our plates that which calls attention to the special subject, whatever that subject may be, whether it is the distance of the mountains or the flatness of the earth, or the peculiarity of the plain, or the human interest of a group.

[Mr. Champney then threw upon the screen a water scene with two men fishing on the bank of the stream, as shown on preceding page.]

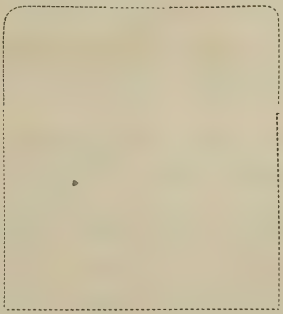
Now that certainly is very charming, and to me it is simply hypercriticism to alter it. The present shape is evidently well thought out, but at the same time I have one point to call your attention to, and that is this, if we are to be in any way interested in the figures, then the outline of the trees above is very annoying. Again, this mass of white sky and water in front seems to be harmful.



Now I place this mat in the position [as shown above] to let one of the trees go out of my picture, and I cut the line of the other tree, forming a charming silhouette. Placing it that way, the doubling of the man forces your attention to the human interest in the picture itself. Now I will draw it out and you can see if it does not center better with the mat than without. Are we not disturbed frequently with the double curve of the conventional lantern slide mat? Is it not wiser to adopt this angle below to contrast with the curve above, and should not the curve above bear a certain relation to it?



Conventional Mat.



Artistic Mat.

Where does our work differ from that of the thoughtless, except in the way of presenting a scene after we have learned to photograph and to choose a subject, and, after we are familiar with the various chemical processes, so that our works hold their own as productions of merit? What is it that distinguishes one work from another if it is not our mental action; our method of presenting the subject; our ability to perceive its merits and demerits?

Now there is another scene. By cutting it off in this way you will see that the change makes a very material difference in the appearance of the picture.

[Showing a bridge scene over a river.]

(*To be continued.*)

◆

ANATOMICAL PHOTO-MICROGRAPHY.

BY DR. J. WEST ROOSEVELT.

[Read before the Society of Amateur Photographers of New York.]

THE particular form of photo-micrographic apparatus which I have to introduce to your attention this evening, is one intended for photographing anatomical and pathological specimens with high powers. It is a very easy thing to photograph almost any specimen, provided you use a low power lens, have a sufficient source of light, and a proper apparatus to work. With a high power lens however, the problem is quite different.

Now it is necessary, in order to explain some of the difficulties to you, to give you some idea of how specimens are prepared for the microscope. I refer now to specimens of an anatomical nature.

In the first place we are obliged to use transmitted light. The specimens must be cut, and they usually are cut with a machine; and they must be cut so thin as to make them perfectly transparent. If you want to secure a good picture from your section it is necessary that it shall be cut, at the most, about from a five-hundredth to a sixteen-hundredth of an inch in thickness.

The specimens are prepared, in the first place, by hardening in alcohol or in other fluids. Then they are mounted on slides of glass like this which I have here, and are covered with a very thin piece of glass on the other side. In order to fasten them on to the slide, we generally use Canada balsam or some similar cement. Now when this is done, inasmuch as the balsam penetrates every portion of the section, the entire detail of structure would be lost, as it is here [indicating], if we did not adopt some way of bringing it out. In order to show the detail then, we stain the specimens. We use some dye-stuff which stains the different portions and brings out those little details which would be entirely hidden if they were put in perfectly transparent balsam. For this purpose a good many stains are used, and this is the first trouble, or one of the first troubles, that one has to deal with in taking microscopic photographs of such subjects. The most satisfactory stain for general use—the one that brings out the details the best—is logwood, which stains certain portions of the tissues only, namely, the small nuclei of the cells, a very dark purple.

Now logwood, when properly used, only stains those nuclei, and it stains nothing else, consequently that brings out a certain amount of detail, as you can see. In order to bring out the rest of the detail, it is necessary to use a counterstain of some kind, something that will stain the rest of the tissues. For this purpose the most satisfactory stain is one called eosine. This gives a deep, dark red. To the naked eye the specimen thus stained looks entirely red. Under the microscope the dark purple of the nuclei cells comes out perfectly distinct as a dark purple, and the rest shows as a red.

For some kind of tissues that stain is entirely unsatisfactory, and here it is necessary to use other colors, as, for example, in these specimens, which are designed to show the fibers of the nervous system, it is necessary here to stain in a peculiar way, first with the logwood stain, then with ferrocyanide of potassium, and the result of this is what is called a double stain. The ferrocyanide selects certain portions only of the tissues, and the logwood selects certain other portions, and the result is a staining which gives you in some part a deep purple and in other parts a sort of an orange-yellow.

In the study of bacteria—the source of so many of our diseases—it is necessary to use a great many different stains. We use a deep red stain produced by the color fuchsine, and a violet stain produced by methyl violet, and a brown stain. These are the commonest stains employed. Under certain circumstances several of the stains have got to be used, each one of those bearing necessarily upon the procedure for successful photography.

Of course, as you well know, red is an extremely unsatisfactory color to photograph by direct light; at least so I am told by my photographic friends. I do not know anything about it myself. With transmitted light, red produced by eosine photographs very satisfactorily. It gives an extremely satisfactory sharp negative and it brings out the details pretty well. I suppose that the reason of this is that practically, with this method of photography by transmitted light, you are in the same position that you are when you undertake to enlarge a negative. The light is behind your picture, and as red is a color which acts slightly, it works quite satisfactorily.

I was told when I first began to photograph that this was not so, but by far the most satisfactory results that I obtained on high powers were out of the common red stain. There [indicating] is a photograph of 350 diameters, showing the cellular structure of some organs. The details have come out perfectly distinct. The stain is red.

After working for a while with those stains of red and deep purple, I tried certain others, and here I have a specimen of the spinal cord cut in a thin section, double stained with logwood and ferrocyanide of potassium. This is produced on ground glass, and it makes quite a beautiful picture. The contrast is very distinct, and the details appear to be very good. Unfortunately the yellow happens to be somewhat of an orange color, and the result is that there is no contrast between the slides.

Here [indicating] is a photograph of 150 diameters an expert (one who knew much about the enlargement of the spinal cord) would recognize very easily. It was taken with a slide stained as this one is; but the orange and the dark purple acting with exactly the same intensity on the plates, it produced no contrast at all.

In special specimens of bacteria it is necessary to use a violet. Now, when you have this color [indicating] it would not photograph at all; it would produce no result on the plate whatever. Now, to overcome the difficulties produced by violet and some other stains, it is necessary to use between the lantern and slide some contrast color. Undoubtedly it would be best to use a prism which would throw monochromatic light on your object. Such a prism is very expensive. A simpler way of accomplishing the same end is to make a glass cell which shall fit between the light and your object, and which you can fill with fluids of any different color you desire. This cell, it must be borne in mind.

should not be very thick. If you are photographing a blue, the most satisfactory color to use as a contrast to it is a yellow, a yellow which shades well on to the orange. You can tell that you have got the right color by looking on the ground glass here [indicating]. When the blue image on the ground glass becomes black you know that you have secured the complementary color of exactly the shade you desire. So much for those details. For this test of shade to use I am indebted to Professor White, of New Haven.

Now this machine [referring to his camera], which I beg to call your attention to, is not original with me at all, except in some of its details. It is the same idea that has been used a great many times before.

An ordinary microscopic-photographic apparatus differs from this in the first place in having the lens fastened to the camera, and in having the stage which carries the object movable so as to get the focus. Now with high powers such an arrangement is bad. It is very difficult to make that stage move evenly. Unless you have a very heavy metal plate for the end of the camera you cannot get a steady bed for the lens; and for this work absolute steadiness is necessary, because the difference of being in focus and out of focus with a $\frac{1}{18}$ lens, such as I have in my hand, which will give 1000 to 2500 diameters, is the difference of less than $\frac{1}{10000}$ inch.

Now in regard to the source of light, the most convenient is the calcium. The sunlight, of course, gives the best light which a person can have for this work, but after that comes the calcium light. The calcium light however is oftentimes troublesome. Now an ordinary kerosene lamp may be used. The best ones that I have experimented with are the duplex or triplex. The circular burner lamps are not satisfactory, for the reason that, although they give a great deal of light around the room generally, you get but very little light when you have to take it from one side. The best kerosene lamp has a wide wick, and the wick should be set edgewise to your lens. This [pointing] is a triplex lamp that came from Europe. It gives a very satisfactory light. To increase the light it is very advisable to have a condenser. The first condenser is situated here in this apparatus. It is a $4\frac{1}{2}$-inch double plano-convex lens with the convex sides set against one another. Now, with low powers that is all the light you need. The concentration is sufficient.

Below the stage you have some such apparatus as this [indicating] for the camera, the diaphragm. The diaphragms are of different sizes. Very small ones are sometimes required.

For high power work another and peculiar condenser is to be recommended. This is the Abbé illuminator, so called from its inventor. This condenser when used without a diaphragm gives light from the center and also from all sides. It is inserted close up under the slide. It intensifies—possibly I can show you how much— the light. You see it makes a very brilliant light. The result of the rays of light coming from below and the sides is that every structural detail of the image is abolished and you get no shadows. Whatever colors you have are shown there on the slide. The color image is all you see. There are no shadows from any point, because the light strikes from every side and does away with the shadow.

Now for our purpose we use this condenser and put in a very small diaphragm behind it. This cuts out the side rays and gives an image which I believe it is impossible to get with any other apparatus. With the diaphragm the shadows reappear, and we have a structure as well as a color-image. This apparatus is only to be used with high powers.

I had this microscope made, and it was made with a special purpose. I have not very much time to study photography, and it is very necessary for me to have everything work immediately and surely, therefore I had the microscope constructed especially. It is a microscope made by Grunow, and it has a very accurate adjustment here. It also has the peculiarity of being able to turn on its stand in that way [indicating]. That is a convenience in searching for objects and you can find what you want to take very easily, and so I can turn the microscope this way [showing] and throw the mirror below it and look through it the same as through any ordinary microscope. The microscope has a very short, wide tube. This wheel [indicating] gives me the coarse adjustment. In fine adjustment, and working with high power, I have the ordinary screw apparatus working against a spring. In order to get that where I need it, it is necessary to get around the edge of the camera, and it is necessary to have a rod coming back to the rear of the box. This rod I have had a universal joint put on so that it will fit in this way [indicating] and attach itself to the fine adjustment. This works perfectly well. I know that it works well because I have successfully photographed with powers of 1200 diameters.

[The speaker then manipulated the rod from the back of the camera, which rotated the fine adjusting screw.]

Now for the details of the photography itself. I won't trouble you very much with these. I use either the lens itself directly without an eye-piece, or with one. There is a lens which I have found most satisfactory for this apparatus; it is a Zeiss D. D. lens, and it gives, with the camera drawn out to its full extent, about 300 to 350 diameters. When you don't use the eye-piece you are troubled in a peculiar way. These lenses magnify very highly. The consequence is, if the light leaves the lens at a pretty obtuse angle and strikes the side of the tube, it produces a reflection from the side of the same that will blur every picture. Now as long as you can see the light reflected from the tube like that [indicating] you will have a blurred picture. In order to overcome the reflection in as convenient and rapid way as possible, I had this little apparatus made and attached to the microscope. I screw this in in the place where the eye-piece belongs, and then I have diaphragms of different sizes that will fit in there, and I use the largest ones. That cuts out the entire reflex light from the sides of the tube. The picture will be blurred if from the end of the camera box you can see any reflex from the side of the tube. With a very high power it is necessary to use a diaphragm as small as this [indicating] to get a clear image.

Now, as to the camera box: I will say that in my house I have the box and the microscope so that the microscope will swing right into line in that way [indicating]. The camera is also secured fast to a well seasoned board. When I am ready to take a picture, and have found the object that I want to take, I remove the eye-piece, or, for some work, leave it in, and I turn the instrument around in that way [indicating], and then I take this velvet curtain (this is a very primitive apparatus). I use an old piece of string that I have had I don't know for how long, and tie it around in that way. That will cut out the light absolutely between the camera and microscope which does not pass through the lens.

Now to get my rays focused, I use what I have not with me, a hand mirror, and simply put it here [indicating just above the ground glass of camera], and focus as well as I can with the coarse adjustment, moving this [indicating] as may be necessary, and when I get it as nearly in focus as I can, I put this rod on and I go around to the rear end of the camera box here and then focus it accurately with the rod. That is the apparatus.

Now I will be very glad to show you afterwards the amount of light that I finally get out of this. It will probably be rather surprising to you. I use (merely because I first began to use them) instantaneous tropical plates. When I started this work originally, I found that the emulsions that they furnished on a large number of plates worked very satisfactorily, and therefore I have continued to use them. I do not know anything about whether they are better or worse than other plates for this work. They are extremely rapid plates. I have got to judge as to the amount of exposure, and I do so simply by experience. With a piece of red tissue and with the present lens of the magnifying power of about one hundred diameters, I should expose one of those instantaneous plates two and a half minutes, provided my light was good. With this Zentmeyer D lens and a magnifying power of 350 diameters, I have exposed the plates from seven to nine minutes, depending on the exact color of the section. With the $\frac{1}{18}$ immersion lens, and a magnifying power of 1000 diameters, or more, the exposure must vary from twenty minutes at the shortest up to two and a half hours at the longest. The exposure also must depend on the light, and the sensitiveness of your plate, and the stain used. With the yellow light that we get from kerosene, and the diaphragm as small as possible, I have had sometimes to expose as long as two and a half hours. The results were in most cases satisfactory.

Photo-micrography, as applied to these anatomical and pathological specimens, is distinctly useful. By means of it, details may appear which you cannot see with the eye. Here is a print [showing a picture] of certain bacteria which cause disease among guinea pigs and mice. It has not only been possible to photograph bacteria like that, but it has been possible to photograph the details of them that the eye could not see at all. For example, there is one which has a peculiar kind of motion. It was thought that that motion must be due to a movable flagella or tail. No one could ever demonstrate that tail until Dr. Koch, of Berlin, succeeded in photographing it. These [indicating] are bacilli which cause the great cattle pests abroad.

There is one detail that a gentleman asks, and that is how to uncap this machine. When you are using a high power and have little light, no cap is necessary. If the exposure is twenty minutes, the amount of difference of exposure left in drawing up the slide would amount to very little. When I have short exposures I simply take a visiting card and drop it in like that [indicating], and then I draw the slide and take the card away suddenly for the required time and replace it. That is all that is necessary to be done.

I will show you some negatives and be very glad to show you how the images appear on the glass.

I would like to call your attention to one other thing. The photographing of one single object with almost any amount of magnifying power is a very easy thing to do. A good lens will do it without much difficulty. I have some photographs that belonged to my father—single diatoms—and they are beautiful. In photographing here we are trying to get a field of as much as 8 x 10 inches in some cases, and that makes quite a different problem from the old ones.

It is quite as instructive to show you some failures as it is to show you some successes. There [indicating] is a spoiled plate; a plate that was spoiled by the reflex light from the inside of the microscope tube. That was in perfect focus, but I did not notice my diaphragm, and you see the whole side is blurred and the middle is also blurred.

[Dr. Roosevelt exhibited several other specimen plates which were examined with interest.]

DEVELOPMENT IN THE FIELD AND A RECORD BOOK.

BY W. E. PARTRIDGE.

[Read before the Society of Amateur Photographers of New York.]

The result of my summer's experience I hope may be interesting to some of my old friends, especially those whose experience is somewhat limited. My first advice to all who intend going into the country for the summer, is to buy their plates in the winter, and test the emulsion until they find the one which suits them. After several distressing failures, arising from using untried plates in the field, I have reached these conclusions.

Plates purchased in June and July have proven less satisfactory than those obtained in March, April, and May. I present no reasons for this and have no theory to offer. The fact, however, has been so thoroughly impressed upon me by the experience of several seasons, that I have no hesitation in suggesting the necessity of testing plates during the winter, and buying for summer use such emulsions as are satisfactory.

During the past summer I made about eighty exposures, and my experience confirms me in the belief that for successful work there must be occasional development in the field. A gentleman who has just returned from a long trip on the Pacific Coast, brought with him some two or three hundred plates, exposed during his journey. The results, a part of which I saw, prove conclusively that he might have saved a portion of his plates had he developed a few during his journey. Another large batch of plates I have just seen developed were exposed in Europe. More than ninety per cent. were failures. A few of these plates developed in the field would have saved a large number of the exposures, perhaps one-half.

After studying carefully over every rational developer that has been suggested, I have worked out the following.

ALKALI.

Carbonate of potash	2	ounces.
Sulphite of soda	1¼	"
Water, to make	7	"

BROMIDE.

Bromide potassium	60	grains
Water, to make	1	ounce.

Pyro and sulphite of soda each carried dry. The solution of the latter may be made in a few minutes just before development. A saturated solution, or one nearly so, used at the rate of a quarter ounce for each ounce of developer, will be sufficiently accurate.

An ounce of the developer is made by taking ¼ ounce of sulphite of soda solution, adding pyro according to the plate, exposure, etc., say from 3 to 8 grains, 3 minims of bromide, and making up to one ounce. In this the plate is soaked. Then the potash is added to the extent of from 1 to 30 minims according to exposure, etc. Usually three or four minims is ample for all exposures greater than the tenth of a second.

The claim I make for it is that it can be put in less bulk than any other which has yet been proposed. It is therefore best for the tourist, who should have his chemicals in the least possible space. A six-ounce bottle will contain sufficient quantity for the development of seven dozen 5 x 8 plates. I prefer to carry the pyro dry, and use the well known mustard spoon for getting at the quantity. I use one which holds, as nearly as possible, two grains of dry pyro. It has the advantage of keeping better than any of its solutions; for the traveler there is the additional advantage that the dry form does not injure other articles if the bottle gets broken. A good wrapping of paper is an ample protection for it. The other chemicals can be carried dry and mixed when wanted. If the granular sulphite of soda be used, it can be carried in a paper box as easily as hypo. Alum is absolutely necessary for some brands of plates. Chrome alum appears to be most effective and is most easily carried. A small quantity answers for a large number of plates. Hypo should be carried in a box or in paper, and in either case should be wrapped in a piece of cotton cloth to prevent particles from sifting out. The chemicals, bottles, and pans for developing five or six dozen plates ought not to occupy a space larger than 10 inches wide, 12 inches long, and 2 or 3 inches deep.

An important point in the field is to be able to recognize a plate and to know at a glance whether a plate has been exposed. A plan I have devised covers the ground more completely than any system I have seen. Every plate receives a consecutive number as it goes into the holder. This number is pasted on to the margin.

I use for the purpose the series of gummed numbers in the early editions of Anthony's little pocket record book. Those in the later editions are too wide. All my holders have slips of white silicate paper pasted upon the wood, and upon this slip the number is written in lead pencil. These latter numbers can be easily erased. As soon as plates and slides are both numbered, and the plate is in place, the number is entered upon a special record book.

The book used for the purpose is a little more than 3 by 5½ inches, and two numbers are placed on each page. When the exposure is made, a lead-pencil line is drawn through the number on the slide, and the usual exposure record made in the book; this record fills less than half the space reserved for it. Exposed plates can now be packed away and kept without injury, loss, or danger of double exposure.

When a plate is to be developed, the first thing done is to rub the number with vaseline or wax, the latter being preferable; this entirely prevents the number from leaving the plate. It remains attached through the operations of development, fixing, and washing. All the particulars of the development are at once entered against the number of the plate, and, after a print has been taken, a final entry in regard to the character of the negative is made. Development record is made in the dark room, and often while development is going on. This plan of record book combines the exposure and development records, and shows the whole history of the plate at a glance. This I consider one of the most important and valuable features of my scheme.

DEVELOPMENT OF LANTERN SLIDES WITH PYRO.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York.]

CONSIDERABLE progress has been made in the development of lantern slides lately with the pyro developer, which seems to prove that it is possible to make one developer answer for negatives and positives, and dispense altogether with the necessity of the iron developer.

From a series of experiments I recently made on Carbutt's A plates, I learned that it was only necessary to use a very weak developer to obtain excellent slides of the proper density. I placed the negatives at a distance of 24 inches from a Carbutt lamp and exposed (the sensitive plate being in contact with the negative in a frame) from 15 to 45 seconds, according to the density of the negative. I developed four plates at a time in one 6½ x 8½ tray, and used the ordinary Beach developer, as follows:

Pyro solution	40 minims.
Potash solution	30 "
Water	3 ounces.

The development proceeds very slow, which is desirable, and takes about ten to fifteen minutes, and it is advisable to make the blacks much darker than they should be, otherwise they will fix out too flat and thin in the hypo solution. The developer should be used fresh each time. I obtain very clear high lights, without the use of any after clearing solution, although I have no doubt it is desirable to employ it. If the developer stands too long, or is used a second or third time, it is liable to give the high lights a very slight yellow tinge. I may say several members of this society are developing slides with pyro very successfully, and their experience, together with my own, and that which I learn has been tried elsewhere, leads me to the conclusion that it is going to be the simplest and easiest method for making lantern slides. If amateurs knew they could use the same negative developer for lantern slides, more of the latter would be made. I do not object to the color of potash slides; if the exposure is nearly correct, it will be a dark brown. It is the sulphite of soda and sulphurous acid in the developer which prevents the pyro from staining the plate, and they thus play a most important part.

If the plate is under-exposed you are not limited as with iron, but can secure a passable slide by the addition of more potash.

Then again the density of the slide is easily regulated; if you wish it to be very thin, suitable for a weak oil lantern, simply decrease by one-half the amount of pyro solution.

If you wish a purple tone, develop with only 10 minims of the pyro solution to 3 ounces of water; and, after fixing and washing thoughly, slightly intensify with bichloride of mercury and cyanide of silver solution (or Monckhoven's intensifier).

To obtain a brown tone, according to Mr. Alvey A. Adee, add three or four drops of the following solution to the developer:

Citrate of soda	50 grains.
Water	1 ounce.

and slightly over-expose.

ON PHOTO-MICROGRAPHY.

BY W. H. WALMSLEY.

(*Continued.*)

THIS method, however, only allows that portion of the object which is in the center of the field to be seen and focused upon, whereas it is frequently desirable to go all over the same to arrive at the best average adjustment. For this purpose I use the following plan, which is so perfect in its results that I can conceive of nothing better: A sensitized gelatine plate, evenly coated, is exposed to a flash of light, and placed in the developing bath a short time, until it becomes somewhat discolored, or clouded over, but not long enough for it to acquire any density. It is then washed and fixed as usual. After fixing, and a prolonged washing, it is bleached with bichloride of mercury as for intensification, and again washed and dried, when it will be found to possess the finest surface for delicate focusing imaginable. And now comes in the use for the single plate holder to which I have before referred.

Slide and back both being removed, the holder is reduced to a mere framework, which is placed in position on the camera, the ground glass screen having been lowered out of the way. The bleached gelatine plate is now placed in the holder (film side toward the image), where it occupies exactly the place that will subsequently be filled by the sensitized plate. The positive eye-piece, or focusing glass, being now placed against the outer surface of the plate, and the eye applied thereto, perfect definition may be effected by means of the focusing cords; the proper position of the image upon the plate having been previously secured through the medium of the ground glass.

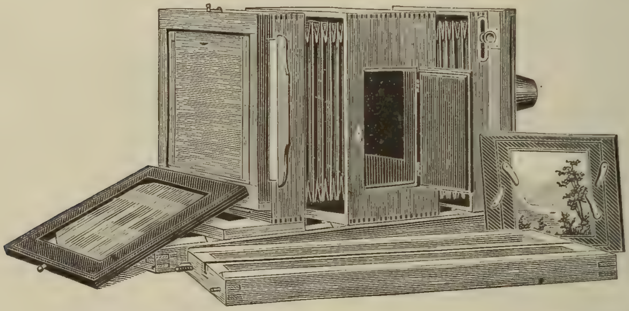
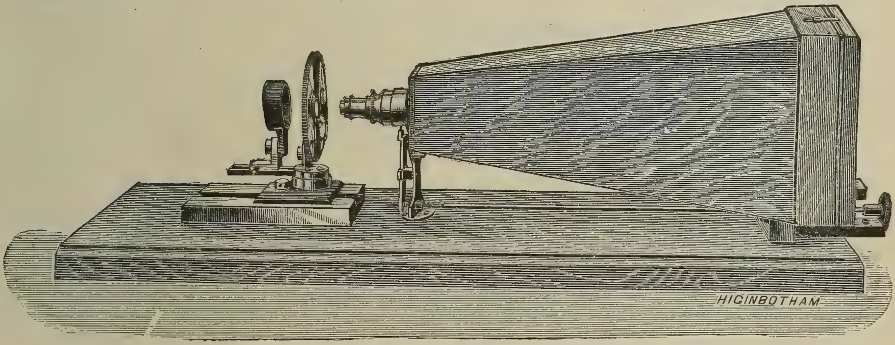


PHOTO-MICROGRAPHIC CAMERA ARRANGED FOR COPYING.

A few words as to the objectives may not be amiss. For powers including one quarter inch and higher, no special corrections are necessary. I have had most excellent results with the higher powers of very many of the best makers both American and foreign; and even the cheap French triplet quarters have produced very good work without further correction. But for all lower powers, a special correction to render the actinic and visual rays coincident, becomes necessary for perfect work. The Messrs. Beck furnish all their lenses from three inches to four-tenths of an inch with a convex lens of suitable focus, set in the posterior part of the mounting, which makes a perfect correction, and a negative sharply defined as the image seen upon the focusing screen.

The proper illumination of the object is of the first importance, since, if we fail in this, all our other efforts are of but little account. Various sources of light are at our command: the direct rays of the sun, diffused daylight, the electric light in various forms, magnesium ribbon, or the oxy-hydrogen jet, can all be used most successfully by those able to command time and apparatus. But my remarks at this time being intended mainly for the benefit of those who have only their evenings at their disposal, I shall confine myself solely to the consideration of that illuminator procurable by every one—a good lamp burning coal oil. Any form capable of being placed at a proper height to suit the stage of the microscope may be used, though some are undoubtedly better than others. The one I have adopted, and find eminently useful, consists of a broad flat reservoir, with large capacity, carried at any desired height upon an ordinary retort stand, and using a duplex burner, with the flames placed at an angle to the plane of the stage, in order to avoid the dark spot in center of field which always results if the flames present their edges to the object slide. The stage of the microscope should be provided with a set of diaphragms of various sizes, the arranging of the object being done with a large opening, whilst the exposure is made with the smallest which will properly and evenly illuminate the field of view. If desired, a condenser can be used to concentrate the light upon the object; but for a long time I have entirely discarded its use with all powers lower than one-fifth of an inch, using the direct rays proceeding from the lamp alone. This gives a more evenly lighted field, and, although the length of exposure is somewhat increased, the resulting negative is better in every way than one made in a shorter time by a strongly concentrated light.



Attwood's Photo-micrographic Camera.

The difference in fact is very marked, and I would urge upon every one using lamp-light to dispense with all condensers with moderate and low powers. With high powers, however, a condenser becomes necessary, and an achromatic combination of wide aperture, or one of the Abbé form, may be used with the best results. Some operators use blue or ground glass for toning and diffusing the light. In short, the subject of illumination is an exhaustless one, and I shall not attempt to pursue it further at present. Neither can I give any certain rules as to time of exposures. The length of these vary greatly with the nature and structure of the subject, so that every one must learn to determine this for himself, as in ordinary photographic work. Using a given objective, and with the same plates and illumination, I have had exposures vary from ten seconds to five minutes, regulated entirely by the difference in the color and structure of the subject to be photographed.

(*To be continued.*)

A TRIP ACROSS OUR CONTINENT.

BY PROFESSOR D. L. ELMENDORF.

[An exhibition of Lantern Slides before the Photographic Section of the American Institute.]

The route followed was from Chicago over the Kansas Pacific Railroad to Denver; thence over Denver and Rio Grande Railroad to Ogden; thence by Central Pacific to San Francisco. Along the coast by steamer to Portland, Oregon; thence up the Columbia River, taking the Northern Pacific Railroad to the Yellowstone National Park. This last railroad having the finest cars and most luxurious service, makes life enjoyable to the tourist.

The first picture was the interior of a Pullman car, with the passengers, *en route*. Then came several views taken from the car windows while the train was in motion. One of these was a prairie town of only five houses, one a billiard and the others four lager beer saloons. A prohibition town No water!

Arriving at Denver, we get a view of the Union Depot, a handsome stone building rivaling our eastern structures. Next came pictures of the court-house, and two views of the Rocky Mountains fifty miles distant, taken from the dome of this building. These last views make the mountains appear only about five miles away, owing to the clearness of the atmosphere. From Denver seventy miles to Colorado Springs, and the first view is from the depot, with the Cheyenne Mountains in the distance. Then follows a view of the Gateway of the Garden of the Gods, showing massive rocks of red sandstone towering upwards sometimes almost perpendicular for many hundreds of feet, and with their faces chiseled as if by the hand of man. They stand out in bold relief on account of the wonderful contrast between the rocks and the background of the brown Rocky Mountains beyond. These pictures are colored exactly like the original scenes, pieces of the rock being secured at the time the negatives were taken to serve as guides to the tinting of the positives for the lantern. Then follows a view of the Gateway after passing through it, which is remarkable for the effects of light and shade. Next come views of the peculiar formations in the garden, and one of Pike's Peak, twelve miles away, snow-capped, and with an altitude of 14,237 feet. Next we have a view of Balanced Rock, and a picture taken from the rock itself, giving a view of the Rocky Mountains. After this we have a picture looking over the valley to Manitou, which is the finest of the series and the best photograph in the possession of the exhibitor. The view cannot be described; it must be seen to be appreciated.

Now come several views of the Ute Pass and one of Pike's Peak at sundown, a very beautiful scene. We next pass up to Pueblo and get a view of the Royal Gorge of the Arkansas River; another of a double train in the cañon, remarkable for its sharpness and photographic beauty; and also a view of the cañon at its deepest point, looking down to the narrowest part where the track is suspended upon a swinging bridge owing to the small width of the chasm. Another picture showed a view of the chasm looking up the cañon from the last position. Passing on to Berkeley, California, we get several views on the Alkali Desert taken from the car windows, and one of the Berkeley Hills. The next view was a California cottage with a profusion of flowers, Marechal Niel roses running up the sides of the house, rose geraniums eight feet high, and hedge-rows of heliotrope. Next came a cottage that was literally covered with flowers. A beautiful view of the Golden Gate across San Francisco Bay from Berkeley; a view of San Francisco from the Bay; Palace Hotel and cable car; Market street, San Francisco; several views of China town; a Joss House; Chinese restaurant; and a Chinese theatre, all give an excellent idea of San Francisco and its surroundings.

The next picture was a view of the Cliff House and Golden Gate with surf, a photograph of great beauty. Then came the Seal Rocks, showing seals, sea lions and gulls on the rocks. Also a view showing the surf, and gulls flying over the water catching the small fish driven in by the seals.

We now pass up to Oregon by steamer and get a view of the Columbia River, a very beautiful scene. Several pictures of Astoria, the great salmon canning port at the mouth of the Columbia, are interesting; and then we pass up the river, getting views of the Salmon wheel, Indian burying ground, Rooster Rock, and the Landing-place.

Taking the Northern Pacific Railroad we now travel on to the Yellowstone National Park, and the first view we capture is the "Devil's Slide," taken from the car window, and a capital shot. A general view of the Mammoth Hot Springs gives us a good idea of the whole region that surrounds these wonderful geysers. A view four miles away shows the outlet of the hot springs, from under a curious rock. We next get several views of the rocky formations of the hot springs, and a glimpse of the Norris Geyser Basin; then a picture of the Mud Geyser, that fills and spouts every 18 minutes from a deep crater; the Devil's Punch Bowl; the Mammoth Paint Pots, a white slimy boiling mass; and the Jet Geyser spouting, the picture showing the separate drops of water, all give a most vivid idea of this remarkable region. After views of several minor springs, we have a picture of the Bee-hive Geyser, that spouts when it feels like it, and at no set time like others. Next comes a view of the crater of "Old Faithful," the most famous geyser in the Yellowstone Park. It spouts every 65 minutes, by actual timing, with a great noise and shaking of the formation around it. A view of "Old Faithful" in action, with a jet of water 170 feet high, is a most wonderful photograph, and probably among the best ever taken of it.

The next views are in the Grand Cañon of the Yellowstone. The first of these is the Yellowstone River above the Falls at sunset, a most charming scene. Next we get a picture of the brink of the Falls of the river just before its tremendous leap of 350 feet into the valley below. Several views give an idea of the upper cañon and the surrounding rocky country. We next see a picture of the Grand Cañon by daylight and another view by moonlight, scenes that are of the most remarkable beauty; a view of the whole cañon showing the formation and the falls beyond; and finally the Great Falls of the Yellowstone, with its cascade of 350 feet.

OUR ILLUSTRATION.

WITH this issue of the BULLETIN we present our readers with a charming study, "The Cider Press," by Mr. C. S. Bradford, Jr., of Westchester, Pa. The subject is exceedingly well chosen and admirably caught from the artist's standpoint. The reproduction of the picture is by the admirable process of Mr. Fred. E. Ives, as carried out by Messrs. Crosscup & West, of Philadelphia. These gentlemen were the first in the world to introduce such a process into continuous successful commercial operation. They introduced this process of Ives' early in 1881, when it was noticed in the *Stationer and Printer* on April 14th of that year, and in July following in the *Moniteur de la Photographie*, of Paris, thus making the invention more than a year older than the Meisenbach process in Europe. It is also worthy of remark that the results obtained by this method of photo-mechanical printing are rapidly growing in favor as a means of book illustration. More than one thousand Ives plates have been used in high class books and periodicals, and Messrs. Crosscup & West do more of this work than all their competitors combined. The illustration which we give of this admirable process speaks more for it than any words of ours.

◆

INCLOSED find subscription to BULLETIN for another year. I cannot think how we could do without it. BRANDT BROS., Iowa.

YOUR BULLETIN I couldn't do without, and I prize it above all other publications. L. D. CLINE, Minnesota.

INCLOSED find check for BULLETIN. Continue to send it, as being without it is like being out of the profession. I found this out decidedly when I failed to receive the BULLETIN two or three times last summer.

F. L. HALE, Connecticut.

OF all the photographic literature which I have ever read, the BULLETIN has ever been my choice over all, the illustrations and answers to questions alone being worth many times its cost. J. H. DUFF, Indiana.

I SEND with this my subscription for the BULLETIN for 1887, as I cannot do without it. It has got to be as necessary as a developing bath with me, as I now use dry plates. BAKER, New York.

IF the following numbers are as good as this one is, I shall be well pleased with it. I liked it very much last year. CHAS. G. HULL, Connecticut.

I COULDN'T get along without the BULLETIN. I get the worth of year's subscription out of every month. W. D. ROSS, Arkansas.

INCLOSED find subscription for BULLETIN, and we are very much obliged to you for sending it so regularly. It is one of the best we know of. Wishing every success in the future, as in the past, Very truly yours,

E. P. MILLER, Ohio.

I FIND much to interest me in the books, but my deepest interest is centered in that dear old BULLETIN. After reading it for fifteen years I cannot be induced to give it up. I consider it a beacon light which leads us on to success. P. ERSLY.

ANTHONY'S

Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,

Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,

and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

[*From the Washington Star.*]

PHOTOGRAPHIC PASTIMES.

"WHAT is the secret of the enjoyment of photographing?" asked a *Star* reporter of an experienced amateur photographer the other day.

"Did you ever land a five-pound trout with a fly rod?" queried he in reply.

The *Star* man was enough of a fisherman to know that lying is a part of the business, and said that he had.

"Photographing is just like that kind of fishing in a way," continued the reproducer of lights and shadows. "You hook your fish, and if he is well-hooked you have grand sport playing him hither and yon, until, all worn out, he succumbs, and lies gasping in the bottom of your boat. He is a beauty, and you call to your companion in the other boat to witness your success. With an admiring glance at him, you begin casting again to catch his mate, if possible. Of course you will proudly exhibit your catch to your friends at the hotel, and the fish is enjoyed, perhaps, at supper time. That is all very pleasant, but the keen enjoyment for you was while you were catching him--from the first moment he took the fly until you had successfully landed him. It is just so with photographing. Making the exposure is like getting the strike by the trout, but the principal pleasure is to come—when you are closeted with the milk white plate in the dark room. Developing your picture corresponds to playing your trout. When you have closely watched the outline of your picture gradually appear and take upon itself the clear outlines of the object photographed, then you have

LANDED YOUR FISH;

you have secured your negative. You may make some prints from it and mount them and exhibit them to your friends, just as you may have had your trout cooked and served up for your friends. But the keenest personal pleasure was when you were developing your plate, when you were playing your trout. You may have jerked your rod too soon or too late and thus lost your fish, and you may have over-exposed or under-exposed your plate and thus lost your picture. After having securely hooked your fish you may have allowed him too much slack and permitted him to throw off the hook, and in the same way you may have made the right exposure, but in the dark room you may have exercised poor judgment in endeavoring to bring out the lines as clearly as possible from the sensitive plate, and seen the embryo picture get befogged, leaving nothing but the cloudy glass when the trout is landed; when the picture is developed, the real fun is over. Printing and mounting a photograph requires some skill, but it is largely mechanical, and the amateur photographer is generally satisfied to let a professional photographer do it. This is the reason so many more photographs are taken than are printed and mounted. The photographer is satisfied in having caught his fish, he doesn't care to cook it."

THE IMPROVED APPLIANCES.

"Why is there so much more interest shown in this amusement now than formerly?" asked the reporter.

"Because of the wonderful improvements in the appliances, particularly the plates," was the reply, "so that a knowledge of chemistry is not essential and the entire work is much simplified. The dry plate system was known seven or eight years ago, but it was not made practicable until within about five years," he continued, "and the sensitiveness of the plate has been more and more intensified until it is now difficult to take anything but an instantaneous photograph, or it will be over-exposed.

A manufacturer sent me a plate a few days ago that would not permit of near as much time or near as large lens aperture as a plate furnished by the same man only two months ago. These improvements in the sensitiveness of the dry plates make it necessary not only to decrease the aperture to the lens, but also to have strong springs to drop the shutter so that the exposure may last but a fraction of a second. We take pictures nowadays in one four-hundredth of the time we did five years ago; that is, the exposure is one-tenth as long as formerly, while the amount of light allowed is only one-fortieth of what was formerly necessary.

"Now I took a photograph to-day with this camera," pointing to a leather case that looked like a diamond drummer's satchel, "and you know that it has been rather cloudy, yet my exposure lasted but one two-hundredth part of a second, while the aperture through which the light entered was only one twenty-fifth of the size of the lens."

"Have the improvements in the camera kept pace with those of the plates?" asked the reporter.

"There has not been the same field for improvements," was the reply, "but the cameras have been made much more convenient and easy to handle. The instantaneous process has enabled us to dispense with the tripod and other incumbrances, so that the compact detective camera can now be used."

A DETECTIVE CAMERA.

"This is called a detective camera," he continued, picking up the leather case spoken of above, "although it is not the genuine article. Everything is in readiness to take a photograph. A screw at the bottom enables me to place an object in focus at a distance of from five to one hundred feet without having to go through the dark curtain process. When I see the object to be photographed appear in the center of this little ground glass in the top of the case, I press this bulb attached to a rubber tube; the exposure is made and the shutter dropped in a fraction of a second, and the plate is ready for the dark room. These cameras are particularly suited to amateur photographers, because they can be carried so easily. I use mine a great deal while driving. I drop it in the bottom of my buggy and when I come across something that would make a pretty or interesting picture I rest the camera on my knee and fire away. In traveling about the country with such an outfit it is absolutely necessary to keep it securely locked, so that the chambermaid at the hotel or some other curious person cannot have an opportunity of seeing what you have been doing. I generally find that when somebody has made an investigation of my outfit, I can't tell afterwards myself what I had been doing. What does one of them cost? Oh, about sixty or seventy dollars. I made this one myself and it answers my purposes very well. Who would ever suppose that a fellow coming along the street with a brown paper parcel under his arm could take a photograph of a man as he meets him, without stopping? By pulling a string a little piece of the paper at the end of the bundle flies up, the exposure is made and the flap sprung back all so quick that the eye cannot see it. An English detective succeeded in securing the photographs of a large number of men who were suspected to be rogues, by disguising himself as a bootblack with an outfit complete. His camera was concealed in his boot box. The 'crooks' finally discovered his dodge and steered clear of him. I have heard of a German who had

HIS CAMERA IN HIS HAT.

"A string passed from his hat, apparently as a guard, down under his vest and the end was tucked in his trousers pocket. All he had to do when he wanted a photograph was to pull the string. Through an opening which was made and closed in the hat so quick that it could not be seen, the exposure was made."

(To be continued.)

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, JANUARY 4, 1887.

President H. J. NEWTON in the chair.

The President, after calling the meeting to order, stated that as Professor Elmendorf had another engagement in the later part of the evening, the parliamentary business of the Section, excepting the report of the Executive Committee, would be attended to immediately after the lecture.

The chairman of the above named committee then reported, that at the next regular meeting, February 1, 1887, the accomplished artist, Mr. Elbridge Kingsley, who was no doubt well known to all present by his illustrative work in the *Century*, would deliver a lecture entitled "Art in Photography," and, if time should permit, Professor S. M. Spedon would present some novelties in the way of "Chalk Talk."

Prof. ELMENDORF was then introduced, and, without any preliminary talk, entered at once upon the work of carrying an audience, limited only by the capacity of the hall, across our continent. [See page 52.] That he was successful in this, none could doubt who witnessed the repeated volleys of applause as they traveled with him, whether in car or stage; on foot or steamer; in desert or city; among the outcasts from China or our own aborigines. All these were portrayed not only by apt oral description, but vividly pictured by means of photography, an art, if one can judge from the examples presented, the Professor has made a most careful study; and with which he has worked such miracles which few photographic artists could ever hope to excel.

No description can do justice to a lecture-entertainment of this sort, for its illustrations constitute its chief attraction. It is useless, therefore, to attempt to describe the numerous noted views of persons and places; of cities and deserts; of mountains and waterfalls witnessed in following the lecturer in his flying trip. The charming simplicity and directness with which he described the views delighted a most attentive audience, and their only regret was that the journey had ended so soon. Credit is also due to Mr. A. D. Fisk for his expert handling of the slides, and to Mr. Beseler, the maker of the lantern, for tbe uniform brilliancy and regularity of the light.

The audience consisted of about an equal number of ladies and gentlemen. Among the latter were many noted photographers of both Brooklyn and New York; artists from three of the leading art schools; and several distinguished gentlemen of travel who had explored for themselves the noted places depicted.

Your reporter being curious to hear the comments by these last named gentlemen respecting the Professor's descriptions, noted the following:

"I have passed over every inch of the ground described to-night, and can vouch for the truthfulness of the report, and the artistic skill displayed in the selection of the illustrations—illustrations that cannot fail (to one who has passed over this route) to recall a thousand little incidents one often likes to remember, though he may not have the disposition to experience some of them more than once in a lifetime. I shall always regret that I was not born a photographer as well as a traveler, that I might possess a more definite record of the life of a wanderer."

After the close of the lecture, a unanimous vote of thanks was tendered to Professor Elmendorf; also the usual vote of thanks for the photo journals contributed to the Section since its last meeting and for the "American Annual of Photography for 1887."

On motion the Section then adjourned to the 1st of February, at 8 o'clock P.M.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE annual meeting of the Society was held Wednesday evening, January 5, 1887, with *President* FREDERIC GRAFF in the chair.

The *Secretary* announced that arrangements had been made for holding the first joint exhibition of the New York, Boston and Philadelphia Societies in New York, at Ortgie's Gallery, on Broadway, near 14th Street, beginning March 26th, and continuing one week.

The members were asked to bear in mind that, though not held in Philadelphia, the exhibition, so far as they were concerned, was practically the annual exhibition of the society. Liberal contributions of pictures would naturally be expected from Philadelphia, and preparations should begin at once for sending a large collection of choice work.

Copies of the "American Annual of Photography for 1887" were presented by the Scovill Manufacturing Co. Messrs. W. H. Walmsley & Co., and Wilson, Hood & Co., and votes of thanks were passed for the donations.

Resignations were received and accepted from Charles A. Brinley, W. L. Shoemaker, and Edward Browning.

The *Treasurer* presented his annual report, showing a satisfactory financial condition.

The Chairman of the Executive Committee not being present, the reading of his report was deferred until the February meeting.

The Committee on Membership reported the election as active members of Messrs. Howard Cramp, Charles T. Thompson, Victor C. Driesbach, W. S. Rooney, and Louis Husson.

The Committee on Lantern Exhibition reported that arrangements had been made for holding an exhibition of lantern slides, from negatives made by members, at Association Hall on the evening of January 12th.

The election of officers and committees for 1887 resulted as follows:

President, Frederic Graff; *Vice-Presidents*, John G. Bullock and Joseph H. Burroughs; *Secretary*, Robert S. Redfield; *Treasurer*, S. Fisher Corlies.

Executive Committee, Galloway C. Morris, Joseph H. Burroughs, and John G. Bullock.

Excursion Committee.—Charles Barrington, Samuel Sartain, and Frank Bement.

Committee on Membership.—Henry T. Coates, Edward W. Keene, W. A. Dripps, William L. Springs, John Bartlett, Joseph H. Burroughs, David Pepper, and Dr. H. M. Howe.

Committee on Revision of Minutes and Articles for Publication.—John C. Browne, John G. Bullock, and Robert S. Redfield.

On the announcement of his re-election as President, Mr. GRAFF addressed the members present as follows:

I feel at a loss how to express my thanks to the members of the society for the honor accorded me by my re-election as your presiding officer. I can only say that the compliment is in the highest degree gratifying.

It is pleasing to record a steady increase of membership to our society, with renewed interest by all in the objects of its organization. The only sad event of the year we have to record is the loss by death of our much esteemed member and ex-president, Mr. Joseph W. Bates, whose valuable services in the interest of our society are fully recognized and will long be felt.

The monthly loan exhibitions made in this room by our members is a good work, which I hope will be continued. It is also hoped that the number of papers read will be increased, so that no meeting, if possible, will be allowed to pass without the production of a written communication.

The proposition made by our society of exhibiting jointly with those of New York and Boston, or rather rotating the place of exhibition triennially, has met with the co-operation of those cities. The first exhibition under the new arrangement will be made in New York, and it is hoped that our members will strive to contribute largely towards it.

We can safely predict for the lantern exhibition on the evening of January 12th, as good, if not better, success than any heretofore held.

Although no very startling discoveries have been published in the photographic world during the past year, the improvements in all branches of the work have been steady and important. The use of paper negatives and films is a new departure, and with the ingenious apparatus for their ready employment, is very attractive to the amateurs, who, as a rule, prefer light weight.

The success of our fellow member, Mr. Rau, with films and paper negatives, in adding to the number of his slides and pictures during his recent trip to Europe was very marked, and must have been gratifying, as well to himself as to the producers of the materials and appliances which enables such work to be so well accomplished.

The prints which may be made upon bromide paper by artificial light supply a want, and it is a great boon to most amateurs.

A number of new lenses have appeared during the year, the efforts of the makers being to produce such as will carry large openings, with sharpness and depth of focus, that we may be enabled to better gratify the strong desire now prevalent for accomplishing instantaneous exposures.

With the same object, the use of the so-called detective camora has been greater than ever before, and with better results. The manufacturers of dry plates have kept pace with improved lenses and new rapid shutters, until it has become impossible to decide in what infinitesimal fraction of a second a picture may be obtained.

The use of photographic processes for book and other illustrations, is growing with very great rapidity, and so general, that even our daily newspapers produce over-night in a few hours, we may almost say minutes, some sort of outline that often serves at least to make clearer the articles written descriptive of an accident or event.

Relief blocks capable of being set up with letter-press are now a necessity. For this application of photographic methods we can turn with great pleasure to the investigations and results brought to such perfection by our fellow member, Mr. Ives, and to him also is much credit due for the advance made in the practical application of orthochromatic photography, and his liberality in making these public.

In the mechanical methods of permanent printing, we can turn with pride to the beautiful work produced daily, and so rapidly, by one of our earliest members, Mr. Gutekunst, in the production of phototype pictures. The microscopic photographs produced by our fellow member, Mr. Walmsley, are wonderfully perfect in their way.

In the manufacture of dry plates, our widely known member, Mr. Carbutt, must be mentioned as one of the first in the country to produce commercially the means of enjoying our art to the fullest, and who vigorously keeps pace with all advances made in that industry.

I do not wish it thought that I desire to ignore other of our members who have done good work, but think we should all feel proud of those who have produced results so creditable to them and of such advantage to the public at large.

The applications of our favorite pursuit are so numerous, that it will take too much time, and be of little profit, even to refer to a tithe of them, extending as they do to botany, meteorology, biology, geology, zoology, in fact to the whole catalogue of "ologies."

Its adaptation to the use of astronomy will be enriched in the near future by the use of the most stupendous camera ever conceived, namely, one having an object glass thirty-six inches diameter, and a focus of more than fifty feet. I refer to the instrument at the Lick Observatory, California, where a duplicate lens for the great telescope is about to be adapted to photographic purposes. The enormous size and perfection of the instrument, and the phenomenal clearness of the atmosphere at the locality of the observatory, must produce results not heretofore reached.

The statistics of the number of dry plates produced by the many manufacturers thereof would be very interesting and instructive; in fact many of the works have been driven to their full capacity, and have been obliged to greatly enlarge their factories. A fair proportion of those made have been exposed by amateurs, of which our society has, I feel, done its full share, and, to judge by the work which from time to time reaches this room, with most excellent results.

The number of societies in the United States with the same objects as our own is now reported to be over thirty, and largely composed of enthusiastic amateurs.

A school of photography has been started at Chautauqua, under the care of one of the oldest practical operators in the country, Dr. Ehrmann. This is a move in a good direction, and will lead to the improvement of those who are enjoying, or desire to enjoy, the pleasures and advantages of the use of the camera.

Hoping another year will pass as successfully as the last, and find us at its end able to record increased numbers and continued prosperity, I heartily thank you, gentlemen, for the honor conferred this evening.

The proposal of Mr. John Sartain, that members should take part in the American Exhibition in London, action in report to which was deferred at the last meeting, was taken up, and, on motion of Mr. Browne, the Chair appointed Messrs. Samuel Sartain, Rau, and Coates, a committee to take such measures as may be necessary in regard to the sending of exhibits by members of the society.

The paper for the evening was read by Dr. ELLERSLIE WALLACE, Jr., on "Silver Printing on Albumenized Paper." [See next BULLETIN.]

During the discussion which followed, the Secretary stated that he had used Labarraque's solution for eliminating hypo from prints for the last two years, pictures which had been exposed in frames during that time showing no perceptible change, and the whole washing process being complete in from half an hour to an hour.

Dr. WALLACE considered the action of the chlorine on the prints to be injurious, and preferred, where it was necessary to economize time in washing, to run the prints repeatedly through a clothes-wringer into fresh changes of water. There was some danger of tearing the prints by this process, but the elimination of the hypo was very thorough.

Mr. BROWNE urged the members to experiment in silver printing on plain paper, calling attention to an article on the subject in a recent number of the *Photographic Beacon.* Salted paper could now be purchased ready for sensitizing. The mat surface of the plain paper gave very artistic results, and the image seemed to be entirely permanent.

Mr. FASSETT has specimens of plain paper prints made in 1856 or 1857, toned and fixed in one bath, which showed no signs of change.

Two questions in the box asked:

First.—"Does a portrait lens contribute to roundness of image in portraiture?"

As bearing on this subject, the Secretary read an extract from an article on "Photographic Optics," by Ernest Gundlack, in the "American Annual of Photography," which argued that a portrait or other lens used with a large opening tended to give an appearance of relief in the image, as well as of brightness, nature, and life.

Second.—"The cause of halation in glass negatives is generally explained as being the result of the light passing through the lens and then through the film, striking upon the back of the glass, then being reflected at a different angle upon the reverse side of the film. Photographic books state that this can be obviated by coating the back of the negative in any opaque color. If this be so, why does not the septum, which is invariably black, and held closely to the plate, answer the same purpose? Will the members of this society please state if, in their experience with paper negatives, they have found absolutely no halation?"

Mr. SAMUEL SARTAIN stated that the

opaque backing must be in optical contact to prevent reflection, and this was not the case with the septum in its relation to the plate.

Mr. RAU had found in most cases an absence of halation with paper negatives, but they were not entirely free from it.

Mr. VAUX thought that where it occurred with paper-supported films, it was caused by the diffraction of the rays of light, which, with some subjects, could not be avoided.

Mr. BARTLETT stated that in making enlargements a certain amount of halation frequently occurred, which he accounted for by the fact that the difference between the visual and chemical foci of the lens was more apparent in the production of the enlarged image.

Mr. VAUX showed a number of negatives, from plates of three different makes, showing dappled markings, like irregular "honey-combing," which appeared after fixing, and the cause of which had puzzled him. It was thought that, though there might be certain conditions in the emulsion rendering the plate liable to this trouble, it was probably due to not keeping the developing or fixing dishes in motion.

Mr. FASSITT related some of his photographic experiences during his recent trip in Europe, mentioning particularly his interesting visit to the exhibition of the Photographic Society of Great Britain; his extremely courteous reception there; and the evident appreciation shown of the efforts made by some of the members to add to the interest of the exhibition by sending specimens of their work.

Adjourned. ROBERT S. REDFIELD,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, DECEMBER 14, 1886.

(*Continued.*)

Mr. JOSEPH P. BEACH—Suppose the glass had been imperfectly prepared before coating?

Mr. RIPLEY—Do you mean imperfectly dried?

Mr. JOSEPH P. BEACH—Yes.

Mr. RIPLEY—Well, I cannot imagine that any such plates can be coated. The flowing of the emulsion would be interfered with. It would flow differently on the wet portions than it would on the dry. It is one of the most remote things that could happen.

Mr. WALKER—I want to impress upon the members of the association the necessity of examining their plates, and this is a subject upon which I have spoken two or three times before; that is, to examine the plates before putting them in the holder. It can be done. Even a red light will show a hole in a plate, and certainly the amber light that Mr. Ripley speaks of—as nobody knows better than he the necessities of the case—would let us know whether there are any pin-holes present, and if so, then is the time to find it out.

This subject of red light has been overdone. No man has been more persistent than myself in opposition to that everlasting cry about a ruby light. It is a humbug. It is not a necessity at all. I was very much surprised when I came back from the country here and found the very light I have been crying for so long. It is a beautiful light, and no man here will deny but that it is perfect. Two sheets of orange colored paper is all you want, and I deny that it will ever injure any plate.

Mr. ROOSEVELT—Well, I have ruined twenty this summer trying it.

I had in the country a dark room that my son had been in the habit of using, and I took ordinary ruby paper, and, covering all the rest of the window, put it on one pane, about 8 x 10 probably, and succeeded in ruining every plate I used.

Mr. WALKER—It is a very difficult thing to argue against Mr. Roosevelt's experiences, because they have been so very odd and eccentric, and no man can tell where you fetch up. I ought to say that all last summer, for at least thirty days, I put three sheets of post-office paper in a full size window frame with a westerly exposure, having a full afternoon sun shining direct on it, and I put the plates under that light and developed them, and then I took a plate and put one-half of it in a book and left the other half out, and exposed to the non-actinic light and then developed them, and I saw no evidence of fogging. That demonstrates the exact opposite of Mr. Roosevelt's experience. His plates must have had pin-holes in them. His plates must have been light-struck before or after they went into the holder.

The *President*—Were these fast or slow plates?

Mr. WALKER—Fast, the most of them.

Mr. ROOSEVELT—You mean to say you would develop plates with that yellow light, like the one upstairs?

Mr. WALKER—We can develop plates with the yellow light that is up there. I developed in our dark room with nothing but a piece of yellow paper around the light; and, Mr.

President, I stick to this point a little, because Mr. Roosevelt is so persistent in what he says. If Mr. Roosevelt will get yellow paper and try it faithfully, he will find that it is true or else I must be fearfully deceived. I will bring some pictures here and show him. They are very beautiful. I have thrown my ruby lamp away.

Mr. JOSEPH P. BEACH—I put in my room six panes of yellow light.

Mr. ROOSEVELT—What do you mean by yellow?

Mr. JOSEPH P. BEACH—I mean a pot yellow. But in the lower row or series of four lights, each of perhaps 7 x 14 inches, I put in two lights of yellow glass; in other words, I doubled the glass in that row. Now I draw a red curtain down between the white light and yellow glass where there are only single lights, down as far as this [illustrating]; measure to the top of the lower row of double yellow glass; and that gives me 14 inches of these double yellow lights in height by the width of the window, and I have never fogged a plate. I can see in the room, 10 x 14 feet, anything that I want. I have always been careful however in taking the plates out of the holders (that is a thing our President taught us). We once tried an experiment on purpose before that window containing those two lights with no red curtain down in front of the table where we develop yellow (the red curtain was simply put up as a matter of precaution in case it was necessary, because sometimes the sun would come in pretty strong from the west side, where the window is), and pieces of plates, exposed for many minutes, did not fog.

Mr. WALKER—A red light would set me crazy. I could not live in it. It not only hurts my eyes, but my mind.

The *President*—Our subject has changed from defects in plates to light. Now I am very sorry to hear that Mr. Roosevelt had such a very disagreeable experience with a yellow light. I have repeatedly tried experiments in our dark room where we have this new light, and where we can see plainly what we are doing all over the room, and are using the most rapid plates; and, so far as my experience goes, there is no danger whatever of fogging the plate. I always caution members who are commencing to develop plates, not to go too close to the light at once, especially if it has been an instantaneous exposure, and I am sure that those who try this kind of light would never go back to the ruby, and I think Mr. Ripley's experience also confirms the experience of the rest of us.

Mr. RIPLEY—As to the many colored glasses and the many colored papers, I want to say that there are a great many to the eye that appear to be the same color, and yet from their make, their composition is entirely different, and where the two look nearly alike, one may be safe and one may not. The only thorough test as to what color is safe, is by the use of the spectroscope. But those amateurs who have developed negatives in what they say is safe light, if they will try and put the plate in a plate holder, and withdrawing the slide half way and setting it up before the light a good length of time, will very soon be able to test whether their light is safe or unsafe. The mere fact of being able to develop a negative in front of a light and have it fairly good, and to all appearances free from fog, does not necessarily carry with it the fact that that light is safe. Some people have a personality about them that enables them to dodge dangerous rays of light. I have developed plates with a light from a candle with a screen between me and the candle, and that plate, while it was fairly good, would have been better if I had worked it with a safer light. The mere fact that a negative don't show absolute destruction or deterioration, does not make it follow that it would have been better than if you had worked with proper tools, and Mr. Walker says that orange paper is safe and the other gentlemen say it is not. They must have heard of papers that looked the same and yet probably be colored with different chemicals.

Mr. ROOSEVELT—I will ask Mr. Ripley a question: Has the red light reflected from a white wall any actinic power at all?

Mr. RIPLEY—I cannot answer that.

Mr. BEACH—Do you not think, Professor Newbury, it is a good plan not to have too bright a light when you first commence?

Prof. NEWBURY—It is well known that the plate is very much less sensitive when wet than dry. It is still less sensitive when wet with ferrous oxalate developer. These facts prove that the plate will stand more light than we sometimes think. The further away from the light a plate is, the less sensitive it must be. I can recommend the suggestion of the President in starting development with a weak light as being advisable.

Adjourned.

FIRST WINTER LANTERN EXHIBITION, DECEMBER 29, 1886.

THE meeting was called to order at 8.15 P.M., *President* BEACH in the chair.

A synopsis of the minutes of the previous December 14th meeting was read and adopted.

The *Secretary* then read the following communications:

Office of *The Photographic Times and American Photographer*,
423 BROOME STREET, NEW YORK.
December 20, 1886.

MR. F. C. BEACH, *President.*

DEAR SIR,—The Scovill Manufacturing Company take pleasure in presenting the Society of Amateur Photographers of New York with an 8 x 10 reversible back camera and two holders, fitted with kits, as a Christmas present for 1886. Yours very truly,

W. I. LINCOLN ADAMS, *Editor.*

OFFICE OF E. & H. T. ANTHONY & CO.,
591 BROADWAY, NEW YORK,
December 28, 1886.

MR. F. C. BEACH, *President*,
361 Broadway, City.

DEAR SIR,—We take pleasure in sending you herewith a 19 x 24 porcelain tray to present to the Society of Amateur Photographers, with the compliments of the season and best wishes for a Happy New Year from E. & H. T. Anthony & Co. Very truly yours,

E. & H. T. ANTHONY & CO.

REPORT OF THE LIBRARIAN.

New York, December 29, 1886.

Since the meeting of December 14th, one copy of the "Photographic Mosaics" for 1887 has been presented to the Society by E. & H. T. Anthony & Co.; also a copy of the *British Journal* Almanac for 1887, by F. C. Beach. The first number of the Proceedings of the London Camera Club has been received. Twenty-three lantern slides have been donated to the society by the Hon. Alvey A. Adee, and one by Marcus H. Rogers, entitled "Smiles and Tears;" also four slides from Hugh C. Baker, of Hamilton, Can.

Respectfully submitted,
R. BAKER, *Librarian.*

(*To be continued.*)

Bibliography.

THE ART REVIEW. New York, 59 Carmine street.

This is a very handsome monthly art magazine, small quarto, handsomely printed on fine paper, and very finely illustrated. In the issue before us, the December number, we find four full page illustrations: one an etching by Moran, and the others photogravures from pictures by Edward R. Thaxter, Alexander Harrison, and Herbert Denman. The letterpress consists of articles on etchings, American paintings, decorative lettering, country house designs, and art notes. Altogether this is an uncommonly handsome art magazine.

PHOTOGRAPHISCHE ALMANACH UND KALENDER fur das Jahr. 1887. Dusseldorf: Ed. Liesegang.

As usual, this well stocked little calendar came duly to our table. As a frontispiece we note a very handsome portrait of Josef Albert, the well-known inventor of the Albertype, and in the text an interesting account of his life and work. Articles by Dr. Schnauss, A. R. Dresser, J. O. Mörch, Ad. Schwarz, Fred. E. Ives, W. Geldmacher, and interesting reviews by the editor, fill up the pages with most interesting reading. The little volume is also packed with valuable formulas and receipts for photographic manipulation.

DEUTSCHER PHOTOGRAPHEN KALENDER, 1887.

Another of these interesting German annuals. As frontispiece we have an instantaneous view of a street scene taken upon Obernetter's orthochromatic plates without a yellow screen, and printed upon his emulsion paper. It is uncommonly sharp and brilliant. We also note a photo-zincograph and a reduction of the same, which shows considerable progress in this process, by Dr. Bruno Meyer. Interesting descriptious are given by both Obernetter and Meyer telling how the pictures were made. The usual list of valuable tables and formulas, together with a report on the year's progress in photography, and a list of the German and other photographic societies, completes the volume.

LA PHOTOGRAPHIE SANS LABORATOIRE. Par Eug. Dumoulin. Paris: Gauthier-Villars.

This is, practically, a little manual for beginners in photography. In 60 small octavo pages it treats of all the necessary manipulations and processes for the preparation of negatives, paper positives of various kinds, and positives on glass. We also have articles on the preparation of dry plates, the construction of the dark room, and the use of lenses. There is an excellent chapter on the time of exposure, and a very useful table to be used during the year. To our French amateur readers we think this little volume will be very useful.

TRAITÉ PRATIQUE DE GRAVURE HELIOGRAPHIQUE. Par V. Roux. Paris: Gauthier-Villars.

This is a little manual of 44 octavo pages treating of photo-engraving upon steel, bronze, copper, and zinc. The first part is devoted to the photographic operations. Then follow the methods for preparing the metal plates and the sensitive surface upon them. Directions are also given about the etching, retouching, and steeling of the plates, together with electrotyping and stereotyping. A very useful chapter is that on failures. This appears to be an admirable little volume written by a practical man.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—G. L. H. writes: I inclose some pieces of silvered paper, the history of which affords a curious illustration of the penetrability of light.

I can vouch for their having been shut away from the light between the leaves of an old copy of the BULLETIN for seven (7) years. Not only that, but this particular number was about midway in a pile some eight inches thick, and the whole had reposed in a dark closet in the attic. The reading matter of the page, you will observe, is printed even to bronze, or rather to a curious red color, which will be plainly seen when held in the right light. The one marked No. 1 affords the best illustration of this. Should be glad to hear your comments in the BRLLETIN or otherwise,

A.—The examples of silvered paper sent are very good illustrations of the action of organic matter upon silver nitrate without the action of light. The cause will probably be found in the size with which the paper is coated, and the extra impression that gives the picture of the type is due to the organic matter of the ink. Book paper is generally sized with some starchy material which readily decomposes, and this coming into contact with the silver nitrate easily reduces it to metallic silver. The play of colors upon the surface is due to the interference of the light waves, and to the same cause as that seen in films of oil upon water in sunlight. One of our friends suggests that the result obtained is not surprising, because the BULLETIN is always so full of light that it acts upon everything coming near it and always leaves a lasting impression.

Q.—E. D., Jr., writes: Kindly let me know through the columns of the BULLETIN, how I can get some pictures off the cards they are mounted on, so that I can place them in a book. I have tried soaking them in water, but when I go to take them off I either tear the picture or bring pieces of the card with it, and that makes them very uneven. Kindly help me out of this scrape and I will be very much obliged to you.

A.—We do not know any better way to remove photographs from card mounts than by soaking them in water. We think slightly warm water acts better than cold, and that by gradually thinning the card mount from the back by peeling off the separate layers as they soften, you will succeed better in softening the paste that holds the picture and removing it without damage.

Q.—G. M. G. writes: Will you please tell me how to make a mucilage or paste for sticking paper, such as used on postage stamps?

A.—The mucilage used on postage stamps is dextrine, or British gum, made by heating dry starch to a temperature of 300 degrees F., and mixing the brownish lumpy mass with water.

Q.—R. K. B. writes: Thinking you could and would give me a little information, I take the liberty, as a friend and subscriber of the PHOTOGRAPHIC BULLETIN, to write and ask if you can give me any information on the subject of the photo-engraving and zinc-etching processes as practiced by the photo-engraving companies and others of your city. Do you know of any books on the subject in this country or in England? or can you give me the name and address of any one from whom I could get any light on the subject?

A.—The whole subject was carefully written up by Mr. George G. Rockwood, of New York, and will be found in the BULLETIN for July, 1884. We must apologize for delay in answering our correspondent, for we see by the date of his letter to our Editors that it has evidently been mislaid and only now has come to our notice.

Q.—W. D. O'D. writes: Would you kindly inform me what process is referred to in the paper, a portion of the BULLETIN, which I inclose, for elimination of hypo from prints. I have lost that number of the journal, and should be thankful if you will help me out.

A.—After a long and tedious search we have found the number of the journal containing the report, a portion of which you inclosed. The process referred to is using a solution of acetate of lead; 5 to 10 grains to the ounce of water will do.

Q.—M. A. C. writes: Please answer, through the columns of the BULLETIN, and advise me about building a new studio. If I build a photographic studio 36 feet long and 12 feet wide, with 12 feet height, shall I carry the top light over the whole width of 12 feet? I am thinking of building a studio on the north side of my house and having it of the above dimensions, and I wish to know if it will be best to carry the glass to the end of the room and how far to carry the top light? Also which end, east or west, is the best to place the sitter.

A.—The studio should face north, and the sitter is best seated at the east end, which allows of working a little later in the day. In regard to the length of glass in the studio, we see no particular advantage in carrying it more than twenty feet; but the top light should be carried the full width of the room. Outside shades to regulate the light are also very useful, if they can be readily arranged.

WE learn by telegraph that Mr. C. Gentilé has been elected local Secretary for the coming Convention, but no date has as yet been settled.

Views Caught with the Drop Shutter.

WE have before us the handsome catalogue of A. B. PAINE & Co., of Fort Scott, Kansas, which bears evidence of a very flourishing business; the more remarkable as the firm is only one year old, and yet has a very large trade.

WILSON, HOOD & Co., of Philadelphia, have now completed their removal to 910 Arch street, and send us their new price list. This well known and reliable firm have our best wishes for success in their new home, and we commend them to our friends in and around Philadelphia as enterprising and obliging gentlemen.

MRS. C. L. MUNDY, of Utica, N. Y., will continue the photographic studio of her late husband, who died a few weeks ago. She has our best wishes for success.

W. H. ALLEN, of Allen Bros., Detroit, the agent of the Suter lenses, gave us a pleasant call lately, accompanied by his daughter Julie.

MR. WALLACH, of Sweet, Wallach & Co., the well-known Chicago photographic merchants, paid us a visit during his recent trip to New York, and gave us the latest Chicago news.

MR. STEVE COLWELL, of Geo. R. Angel & Co., of Detroit, also called on us lately and gave a good acount of our Michigan friends.

WE reget to hear that J. W. C. FLOYD, the photographer of Lock Haven, Pa., suffered considerably damage from a fire in the block where his studio was located. We are glad to note that he was insured.

THE firm of JNO. ERKENBRACH & CO., have dissolved partnership, and Geo. A. Erkenbrach will continue the business at 34 Platt street, New York City.

MARCUSE & CUNNINGHAM, of Montreal, Canada, have dissolved partnership. Mr. J. Cunningham will liquidate the affairs of the late firm, and carry on the business, under the name of James Cunningham & Co. Mr. B. Marcuse will continue to deal in art goods and optical apparatus at 206 McGill street, Montreal, while Mr. Cunningham is located at 14 DeBresoles street in the same city.

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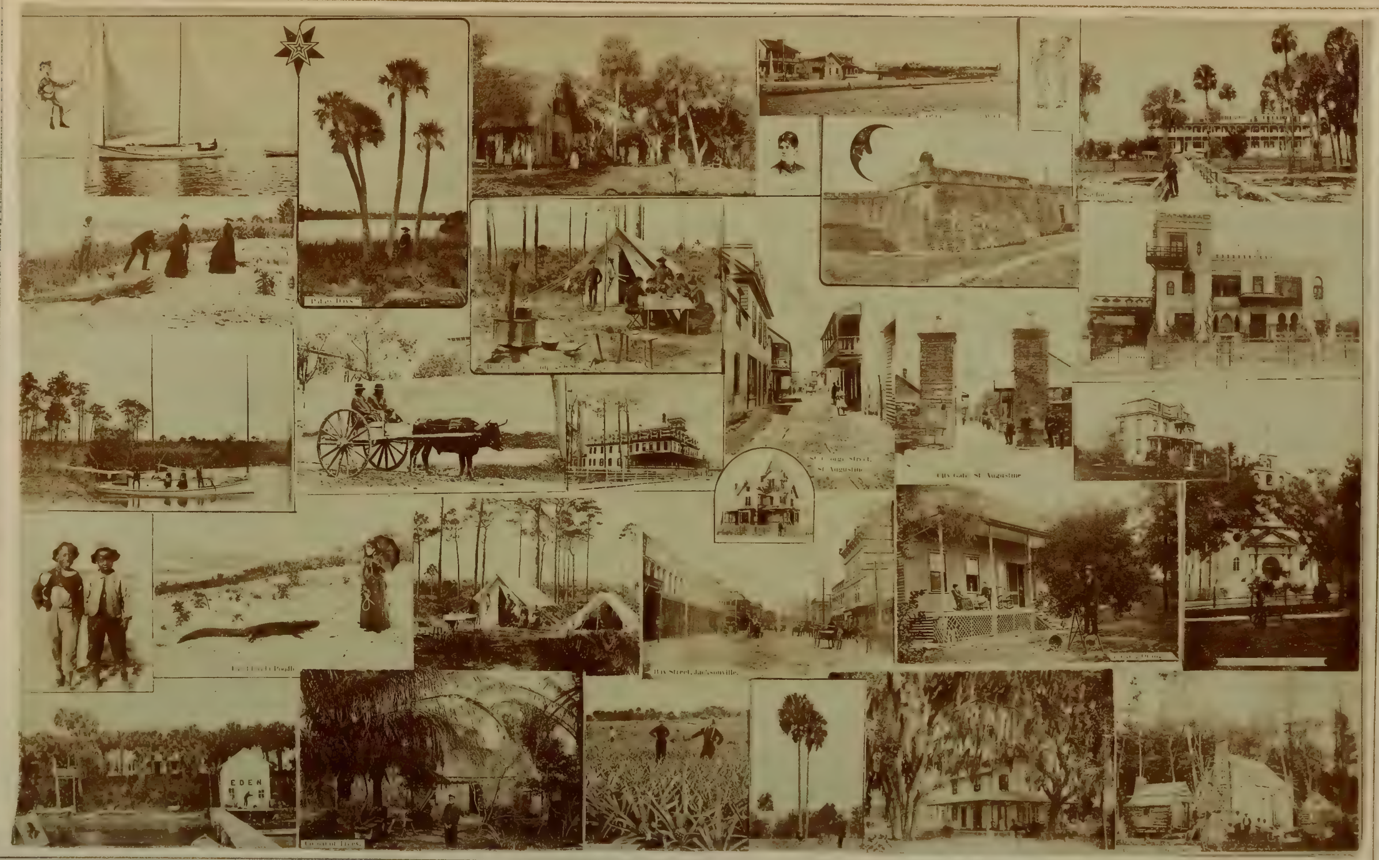
EVENING POST JOB PRINT, N. Y.



NEGATIVE ON
STANLEY DRY PLATE.

A Florida Mosaic.
–BY–
Marcus H. Rogers.

PRINTED BY J. B. HUNTER,
ON
N. P. A. GREEN EX. BRILL.
ALBUMEN PAPER.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

FEBRUARY 12, 1887. Vol. XVIII.—No. 3.

THE CHICAGO CONVENTION.

THE EXECUTIVE COMMITTEE of the Photographers' Association of America have had their first meeting in Chicago, and have arranged the programme for the great Convention in that city next summer. We give in another part of the BULLETIN the full report of the proceedings of the committee and the programme for the four days that the Convention will be in session.

With Mr. G. Cramer, of St. Louis, at the helm, we cannot but believe that the whole affair will be a grand success. But to insure success, every member of the association must begin now, and *at once,* to prepare his quota to the general feast of photographic reason that will be spread before him and his fellow artists at Chicago.

The date for the opening session of the Convention is now set for August 9th, and the sessions will continue daily until August 12th.

The large number of medals offered for photographic work of all kinds should bring together such a display as hitherto has not been seen in America. The letter of Mr. Cramer, which we print on another page, will show the spirit in which these medals are offered for competition.

With thirty-three medals and a diamond badge, the chance of obtaining some reward for skill and perseverance is held out to every photographer in the United States and Canada. By the peculiar classification adopted. small competitors have an opportunity of showing their photographic ability without any fear of being outstripped in the contest by those more favored by fortune.

The prize of a silver medal for the best improvement in photographic apparatus or accessories is also a good idea, and should be a stimulus to the inventive genius of a large number of the members of the association.

We also note with satisfaction that the competitive exhibits are to be shown without frames and without glass. This is a very decided improvement, and will simplify the work of judging of the merits of the pictures as examples of photographic skill. Another good decision of the Executive Committee is, that the cards describing the exhibits shall not be larger than 7 x 12 inches, and must contain only the name and address of the exhibitor. This is one of the suggestions made by the BULLETIN some months ago, and we are satisfied it will be a great improvement over the method adopted at St. Louis, where the display of advertising cards marred the beauty of many an otherwise fine display of pict-

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ures. We are sure Mr. Gentilé, the Local Secretary at Chicago, will see that this rule is strictly adhered to. If but one member breaks the rule there will be many others who may find it an excuse to do likewise. Let us see if we cannot have a display of pictures at Chicago that will show photographers to be artists and men of good taste. The well known editor of the *Eye*, Mr. C. Gentilé, has worked hard to get the Convention at Chicago, and we are satisfied he will do all in his power to carry out the rules for the best interests of photography.

All our readers who are interested in the welfare of our art should do something for this national Convention of the fraternity. If possible go to Chicago. The rates of travel will undoubtedly be low, and the time is placed at such a date that the vacation would be a great benefit to many a hard worker in the studios. You will meet there the best photographers in the United States and Canada, men second to none in the world. You will see there an exhibition of photographic skill that it is a photographic education to look at; and it will give you ideas that it is impossible for you to obtain in any other manner. Go to Chicago and meet the leading photographers of America, and we can assure you that you will find the great majority of them gentlemen of good taste, liberal ideas, progressive, and to be admired. Contact with such men will lead you out of your own circle into the larger life of the whole fraternity, where, without doubt, the tendency is onward to the higher levels of our art.

Make up your mind now to arrange to go to Chicago, and we can assure you that the day will come when you will thank us for urging you to take the trip, and the recompense will come home to you in a score of suggestions and ideas that you cannot help obtaining by association with the men you will meet at the Chicago Convention.

EDITORIAL NOTES.

Photography is receiving a very useful application in the preparation of the new Century Dictionary. Over 25,000 sheets of copy have already been prepared for this immense work, and to insure the preservation of this great amount of labor, which in many cases would be an irreparable loss, each sheet has been photographed upon plates 1¾ x 2 inches. This reduction in size is for convenience in storing so large a number of negatives, which only fill a large bureau drawer.

The newly organized New Orleans Camera Club has fully settled down to good work. We are indebted to Mr. W. W. Crane, the Secretary, for a kind invitation to the first exhibit and sciopticon display, which was held February 8th, at Tulane Hall, New Orleans. We regret that space and time, two important elements in human existence, prevented our participating in what was doubtless a thoroughly enjoyable entertainment. We send our best thanks for the invitation, and hearty good wishes for the success of the society of our Southern friends.

One of our most prominent photographers was recently troubled with measles in his printing department, and writes us that his difficulties disappeared after making experiments with several kinds of ammonia. After three trials he obtained the right kind of ammonia and the troubles vanished. He reduced his silver bath from 60 to 45 grains, and the time of floating from 2½ to less than two minutes, while the fuming was reduced from 2 hours to less than one hour. He concludes by saying that "*the printing is right.*" During the cold weather every detail in the printing department should be carefully watched to insure success. Don't condemn the paper until you are sure it is not something else.

We recently had the pleasure of seeing some exquisite miniature painting by Mr. E. Irlande, of New York City, who has made a study of this kind of work for many years. The basis of his operations is a photograph, to which he adds tones and values of such a character that the result is an object of great beauty. These miniatures are made in oil, and are in great demand amongst the first-class jewelers and the *elite* of New York City. The setting is often a fine gold watch-case, or a breast pin with a border of gems, and the effect is rich aad artistic in every sense.

Our contemporary the *Photographic Times* has kindly sent us two bound volumes of the issues of the journal for the year 1886. These we have placed upon our editorial shelves to be handy for reference, and we must tender our best thanks for the kind consideration of the editor.

The Bulletin always aims to do its best for its subscribers, and when we call forth the admiration of our contemporaries we feel we have indeed done well. Dr. Nicol, in the *Photographic Beacon*, of Chicago, speaks as follows of the beautiful "child study" by Mr. H. McMichael, which recently formed the illustration of the Bulletin: "In this picture the artist has asserted his own individuality, and produced a study as nearly perfect as ever was made by brush on canvas, or by the aid of the camera." Such praise from a veteran like Dr. Nicol is worth having, and we must congratulate our friend McMichael upon his success.

Chicago is now the home of a new Lantern Slide Club, and Mr. E. D. Fisk is the President. We are glad to note the increasing interest in transparencies. They are uncommonly entertaining during winter evenings, and a source of pleasure easily arranged for a large audience.

Kansas is to have a State Association of Photographers. W. S. Rogers, of Wichita, is President; L. Brown of Independence, is Secretary; and H. T. Martin, of Topeka, is Treasurer. Their first meeting will be held at Wichita; the date is not given.

The New Haven Camera Club is now located in the Insurance Building in that city, and expects to gather in the seventy-five amateurs of New Haven and vicinity. The club is provided with a dark room and some large pieces of apparatus for the convenience of the members. It has our best wishes for success.

The fourth annual display of lantern slides at the Photographic Section of the Cincinnati Natural History Society, took place on January 19th last. The following members of the club contributed to the exhibition, some one hundred slides being shown: Mr. Archer, Mr. Howard Barney, George Bullock, H. F. Farny, W. C. Fiedeldey, Professor Thomas French, Mr. Charles W. Goepper, Dr. Frank Hunter, Dwight Huntington, E. J. Carpenter, George McLaughlin, Clarence Gilmore, Jno. L. Nichols, Judge Longworth, L. M. Petitdidier, A. D. Smith, T. B. Collier, E. B. Johnston, T. H. Kelley, Mr. Nelson Sayler, Dr. LeBoutillier.

It was an exhibition of uncommon excellence, each slide possessing some special excellence of pose or finish to commend it.

THE Boston Camera Club, since its reorganization and the admission of professional photographers, has risen to a flourishing condition. It now has ninety members, and is located in handsome rooms on Bromfield street. At the recent election the following officers for the ensuing year were elected: President, George E. Cabot; Vice-President, Francis Blake; Secretary, John H. Thurston. We are satisfied that the union of amateur and professional photographers will tend to the benefit of each.

THE Year Book of Photography has recently arrived, filled with the usual load of photographic information. We are sure that none of our readers who have the former editions of this handy and useful yearly visitor will disagree with us when we say that it should be in the library of every intelligent photographer. The Year Book and the *British Journal* Almanac are two of the cheapest and best stores of photographic information we know of.

THE English Photographic Convention is to be held in Glasgow in July next. There are seventy photographers upon the local committee, 42 professionals and 28 amateurs. We have no doubt of the success of this Convention, and must congratulate our friend J. Traill Taylor upon the hearty growth of his project of only one year old.

THE fame of the BULLETIN is rising abroad. The pictures of our friend G. M. Elton, that illustrated this journal a short time ago, have been admired by the members of the Birmingham Photographers' Society for "the excellence of composition and finish." We are glad to note the good taste of our English cousins, and must congratulate Mr. Elton upon his broadening fame.

AT a recent meeting of the Camera Club of London, Mr. A. R. Dresser handed round some specimens of negatives on plates having the back surface of the glass finely ground, which added very little to the cost of the plate, softened the print, somewhat mitigated the evils of halation, and afforded easy means of retouching.

WE especially call the attention of our readers to the report of the Executive Committee of the Photographers' Association of America to be found upon another page. Read it carefully and get ready at once for the Convention.

◆

As we go to press we receive an interesting article from Professor G. W. Hough, of Chicago, on the subject of "Dark Room Illumination." This will appear in our next issue.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Magnesium for the Sciopticon—Small Negatives for Landscapes and Enlargements from them—Practical arrangement for Solar Cameras—Orthochromatic Photography without Yellow Screen.

In my last letter I wrote to you about Ney's magnesium lamp. This has proved to be reliable, and I have had occasion to try it during three weeks for microscopic work. As a result I have observed that it will keep going for fully three hours without any necessity of winding it up, and that the movement is absolutely even and regular. The wire is extinguished much less than in the old English magnesium lamps, and they are now used with success for the sciopticon. This might also be looked upon with interest in the United States, as the operation with a magnesium ribbon is much more convenient than with lime light and hydro-oxygen cylinders.

The sciopticon is used here also for enlargements, and the Eastman positive paper meets with more and more favor for these every day. There is hardly a show case here which does not contain some of these enlargements. The manner of production is relatively easy, and they are actually so fine, that in many cases enlargements will be made where formerly direct views were made on large plates.

During my travels I have so far always used the 5 x 8 size, believing that to be the most handy and convenient; but last year my son went on a trip with a 3 x 4 camera, carrying only one-fourth the weight that I had. The small negatives so obtained admitted of twice and even three times their enlargement without trouble, and the negatives and positives so obtained are just as handsome as views taken direct.

This may induce me to travel for the future with just such a small camera. The enlargement of the negatives can be done direct on the Eastman paper and this will satisfy the amateur, who generally uses only a few prints. On the other hand an enlarged negative may be made by copying the original negative upon a gelatino-bromide plate by lamp-light, and from the positive so obtained an enlarged negative is made in the solar camera. It is an advantage thus to make easily reversed negatives for the lichtdruck. It might be said that the size, since the introduction of the negative paper, is no obstruction any more. But the negatives upon paper are by no means so fine as those upon glass, the grain and the fiber of the former always interfering. For practical working for positives, I would mention that the exposure at a distance of three feet from the gas-light takes from 2 to 10 seconds, according to the density of the negative.

A carbon diapositive can also be taken, instead of the diapositive upon a gelatine plate, by simple transfer. This is vastly cheaper than a dry plate diapositive, considering the low price of carbon paper. This mode of taking views on small plates finds more introduction every day, and the time may come when it will be generally used, and that large cameras for use in the field are entirely abolished. The main point for enlargements made this way is to find readily the proper proportion of the enlargement, so that the correct focal length of the solar camera can be found at once for making the enlargement two, three, four, five or more times the size of the original. For this purpose I have taken a plain camera with movable back, and have marked it in the following manner: I fasten a short focus lens (at most two inches) to the camera, focus upon a pretty distant point of a landscape, and measure the exact distance from the ground glass to the central stop (diaphragm). The surest way to do this is to unscrew the two lenses from their mounting, but leaving the stop in its place, and then to measure through the brass tubing to the ground glass. This can be done to within half a millimeter. Thus the focus is obtained, of which correct note should be made. On the bed of the camera a mark should also be made, to know where the focus is. This mark is now the starting point. From it, towards the back of the camera, one-half, one-third, one-fourth, one-fifth, one-sixth, one-eighth, one-tenth of the focal distance is noted with numbers on the bed of the camera, thus knowing exactly to what length the camera has to be drawn out to obtain an enlargement of a certain size from a negative. If focused upon one-half, an enlargement of double the size; if upon one-third, triple the size; if upon one-fourth, four times the size will be obtained, etc. I then place my camera generally against a larger one without lens, so that both fronts face each other, and the negative to be enlarged towards the sky, which illuminates it. Eventually I place a mirror in front and illuminate by this.

To ascertain how far the rear camera has to be drawn, regard must be had that its ground glass for a triple enlargement has to be three times, for a quadruple enlargement four times as distant from the objective (that is its diaphragms) as the original. If therefore focus is taken approximately upon this point, the correct place will soon be found.

These small preliminaries facilitate the work of enlarging very much. Better still than two cameras whose connecting point has to be made light-proof by a covering cloth, is of course a camera possessing a division in the middle of the bellows, in which a lens can be put, while on the face, in place of the lens board, the negative to be enlarged is placed. Such arrangement might be of advantage when the enlarging of negatives comes into more general use. For this there are now the best prospects.

In my letters I have repeatedly made mention about the color-sensitive (isochromatic or orthochromatic) processes. I hope it will be ascribed to an inventor's vanity, by returning to the same subject now, because, what I have to say might be of general interest. Until lately a yellow screen was always needed for orthochromatic views. Now I wrote to you in November last year that this is no longer needed.

My friend Obernetter and myself at present prepare orthochromatic plates without yellow glass. These are based upon the application of the eosine silver, whose enormous optical sensitizing power I already noted two years ago. In Volume XXI, page 42, of the *Mittheilungen* for 1884, I published my observations, and declared that gelatine plates sensitized with eoside of silver are ten times more yellow sensitive than eosine plates without addition of silver. During the month of May of last year I also observed the high sensitiveness of erythrosin silver. The aforesaid is all that is necessary to comprehend the composition of these new plates. How eosine silver is made has already been described by Baeyer, its discoverer, in 1876. My friend Obernetter made the first attempt for the production of such plates, by bathing gelatine plates first in silver solution and then in erythrosin solution; I went to work in a much more simple manner, I mixed the color solution with nitrate of silver and ammonia. Such solution may be added to the emulsion, or may, diluted with water, be applied for bathing. The strength of the dilution is entirely according to the character of the plates. Highly sensitive plates will stand less, others more coloring matter. It is therefore almost impossible to give a definite formula or prescription for all cases, particularly as the same eosine colors from different manufacturers will act differently—rose Bengal from Paris having a very good action, while that from Berlin is less good.

To illustrate this, take 10 c.c. rose Bengal, eosine or erythrosin solution, 1 to 1,000; add 10 c.c. silver solution, 1 to 1,000; 1 c.c. ammonia diluted to 50 or 100 c.c. with water. Bathe the plates in this solution and dry them. This is one of the many formulas tried by us which give the easiest results. It is best to use the plates within four days, as they will hardly keep any longer.

If the developer should fog, take bromide of potassium.

Pyro developer is to be preferred as most suitable. I would recommend the pyro-soda developer after the following formula:

SOLUTION NO. 1.

Neutral sulphite soda	100	grams.
Pyrogallic acid	14	“
Distilled water	500	“

SOLUTION NO. 2.

Carbonate of soda	50	grams.
Distilled water	1,000	“

For use mix one volume No. 1 with two volumes of No. 2.

Unfortunately these plates have not the fine red sensitiveness of the azalin plates. But the superiority of the same with regard to color-sensitiveness is shown at once in outdoor views, particularly in green landscapes with blue sky. Only for oil paintings recourse will sometimes be had yet to a yellow glass to increase the difference between yellow and blue.

One very disagreeable circumstance is very much felt in this process, and that is the impure condition of the color matter as found in commerce. It may frankly be asserted that pure eosine or erythrosin is not to be had. Each manufacturer furnishes a different quality, and only by tests can the best and most suitable be discovered. As things look now there seems to be very little chance for an improvement in this respect. Chemically pure aniline colors are not required for the coloring purposes they are now made for, and the quantities used in photography are so small, that it would hardly pay the manufacturer to produce them in a chemically pure condition.

BERLIN, January, 1887.

ORTHOCHROMATIC PHOTOGRAPHY.

To the Editors of the BULLETIN.

ABOUT this subject I have read an article published lately in one of the American journals which evidently has been written by some one who does not understand much about it.

The author asserts: “If plates are colored with a yellow or orange dye, blue and violet rays will be intercepted and the force of their action reduced. Green will act similarly on red rays and red on green;” and further: “Ives employed the green chlorophyl for the depression of red.”

I would advise the learned Doctor to ask Mr. Ives whether he actually uses green chlorophyl for the depression of red. I am sure Mr. Ives will inform him that he uses chlorophyl for elevating the action of red.

It is also a fact that red eosine dye does not reduce the action of green rays. On the contrary, bromo-collodion plates stained with eosine are about sixty times more sensitive for yellow and green rays than ordinary plates, as I have demonstrated by satisfactory experiments years ago.

The learned Doctor does not seem to know anything about my examinations and researches, or probably he does not want to know, for he has had ample opportunity in Mr. W. Kurtz's gallery, as operator, to become acquainted with my labors in regard to orthochromatic photography. He may have also heard there the name of the first inventor of orthochromatic photography. But as he does not mention his name, perhaps from lack of memory, I will help him to refresh the same by mentioning the name of a man, highly respected in the whole photographic world, the celebrated Dr. Eder, who says in volume XCIV of the reports of the Vienna Academy of Sciences, 1886, page 380:

"By the discovery of the action of coloring matters as sensitizers for the less refractive rays by Dr. H. W. Vogel, the means are obtained to make the bromide of silver sensitive for green, yellow and red by suitable coloring matters."

But the learned Doctor may have already forgotten his native country, or perhaps he cannot find the reports of the Vienna Academy. I will help him therefore with an English quotation from the pen of Dr. Eder, and to make it very convenient for him, I will take it from the *Photographic Times.* If he will kindly peruse the article in Volume XVI, p. 483, 1886, by Dr. J. M. Eder, "The Progress of Photography in Germany and Austria," he will find: "Dr. H. W. Vogel discovered, in 1873, the property of many coloring matters to increase the color-sensitiveness of the bromide of silver of those rays of the spectrum they absorb," etc.

I hope that the learned Doctor will thank me for refreshing his memory by appealing to the journal whose contributor he is. This circumstance may induce him to study his subject a little more thoroughly and closely before he writes again about orthochromatic photography. For this purpose I would recommend to him Eder's Year Book, pp. 308–12.

Yours truly, H. W. VOGEL.

THE PRIZES AT CHICAGO.

ST. LOUIS, January 28, 1887.

To the Editors of the BULLETIN.

YOU will have received by this time the minutes of our Executive Committee's meeting, and noticed that we have tried our best to meet the demands of the fraternity in making the awards of prizes to suit all classes. The prize in class C is intended to give those photographers a chance to win a medal of merit who have not the means and facilities which their more fortunately situated brethren enjoy. In cabinet cards they can all compete with good prospects, and our arrangements are intended to prevent photographers of prominence from entering in this class, and to induce them to strike higher. We have given this matter careful and exhaustive consideration, and nothing better suggested itself. All other plans presented insurmountable difficulties upon going into their details.

In all the arrangements we have made, it has been our sole aim to make the next Convention a success, and we hope that the press and the fraternity at large will join in our efforts.

Let all elements unite for the one great purpose: The advancement of photography and the progress of the Photographers' Association of America.

Yours truly, G. Cramer.

President of P. A. of A.

OUR ILLUSTRATION.

With this issue of the Bulletin we present our readers with a combination picture, called "A Florida Mosaic," by Marcus H. Rogers, an ex-editor of Massachusetts, and an enthusiastic amateur photographer, who has tastefully arranged some of the photographic results of a winter in the land of flowers. As Florida has become a sort of Mecca for amateurs, the attractive tropical scenes portrayed in the mosaic will tempt many others who go South to spend the winter, to take a camera along. Mr. Rogers tells us that the original negatives, 5 x 8 in size, were made on Stanley plates, except two or three which were on paper, and that the prints were made on bromide paper and dried on plate glass. To avoid reflections, and to secure the best results in copying, he found the best light out of doors, when the sun was obscured by thin clouds, the light striking the pictures at an acute angle. Using Stanley plates, a lens of ten-inch focus, and a diaphragm made with a shoe punch, two seconds time gave fine sharp negatives.

Some interesting facts concerning the extraordinary latitude of exposure possible with the Stanley plates, still obtaining a perfect negative, are given us by Mr. Rogers about a 5 x 8 plate represented in the mosaic—the fifth in the lower row. He says that he visited the place of Mr. Styles, five miles south of Jacksonville, with half a dozen plates in holders, and exposed five on different views about the premises, reserving one for this view of the house and moss-covered oaks for the afternoon light. Using a holder from which the slide pulled to the left, he drew it out and walked slowly around the tripod, so as to remove the cap with his right hand, and, looking for a moment at the ladies on the piazza, and the horse, to see that all were still, he reached for the cap and to his dismay found it was already off! Placing his hand over the lens until the slide could be pushed in, he realized that it was his last plate, and that it had received at least a dozen times too long exposure. He brought the plates North for development, and used the combined potash and soda developer, three drams of the pyro and the same of the alkali solution in three ounces of water being the normal strength and quantity. In developing the plate referred to, three ounces of water and three drams of the pyro solution were first poured upon the plate, and then three drops of the potash were used, which brought out the picture gradually; then three drops more were added to give it proper strength, the result being a soft, beautiful negative, the detail in it being simply perfect, as we can see in a copy of the picture before us.

Mr. Rogers also sends us what he calls his "Mewsings on the Mosaic," which will be found in another column.

All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

FUMING SENSITIZED PAPER WITH CARBONATE OF AMMONIA.

By Professor O. N. Rood, *of Columbia College.*

It is not necessary to dwell on the annoyance caused by the fuming box in which canstic ammonia is used; it is well known to photographers, and has sometimes been characterized as the greatest nuisance connected with photography. Some time ago it occured to me that the fuming process might be simplified, and even rendered more efficient by the use of ordinary carbonate of ammonia, and as this proved to be the case, I take the liberty of communicating the plan which was finally adopted.

The sensitized paper is, so to speak, salted down in a card-board box with sheets of filter paper and a plentiful sprinkling of freshly powdered carbonate of ammonia, and put away in a dark place. No bad effect is produced if the salt comes in contact with the sensitive surface, and a box thus prepared will keep for weeks without discoloration. When a print is to be made, the sensitized paper is placed under the negative and backed up by a pad charged with freshly pulverized carbonate of ammonia, the pad consisting merely of a folded sheet of filter paper containing one thickness of Canton flannel cut to the size of the negative and well powdered with the salt. A pad thus prepared remains efficient for a day or more, that is, as long as it smells strongly of ammonia. The prints thus obtained are in every way equal to those furnished by the old fuming box. In some respects this system has considerably the advantage over the older one. If the light is dull and the printing process slow, the vapor of ammonia absorbed by the paper in the old fuming box entirely evaporates long before the print is finished, while the pad, on the other hand, keeps up the supply indefinitely. The paper is not turned yellow or brown by the pads nor by the pad box, and it is always ready for immediate use.

I found when the sunshine was very bright and a pad alone used, without the previous employment of the pad box, that the ammonia was not furnished quite rapidly enough at the start, and the prints resulting were inferior to those given by the old process. Where the printing process requires an hour or two, the use of the pad box is not so essential. It is hardly necessary to remark that photographs fumed with carbonate of ammonia tone without the least difficulty.

When common carbonate of ammonia is exposed to the air it splits up into neutral carbonate of ammonia, a very volatile pungent compound, and bicarbonate of ammonia, a white powder, which is entirely inert for fuming purposes. It is then the neutral carbonate of ammonia which is the active agent in the use of the pads and pad box.

The experiments above mentioned were made during the winter months, and in all of them Anthony's ready sensitized albumen paper was used. Prints from the same negative, fumed with caustic ammonia and with carbonate of ammonia, as above described, have been furnished to the Editors for comparison.

[Four prints sent to us by Professor Rood fully confirm all his statements in the above paper. It appears to us that the prints made with carbonate of ammonia fuming are decidedly better than those made by fuming with liquid ammonia.—Eds. of Bulletin.]

Please send the Bulletin for 1887. It is the best publication of the kind for the price.

V. M. Horton, Boston.

FOCAL ADJUSTMENT IN DETECTIVE CAMERAS.

BY CLARENCE E. WOODMAN, PH.D.

As detective cameras are ordinarily made and used, the position of the pointer on the index plate, indicating the focus of objects at different distances from the lens, is determined entirely by experiment, *i. e.*, by actually "drawing a bead" on objects ten, twenty, thirty, fifty or more feet away, focusing them upon the ground glass, and then marking lines corresponding to these distances opposite the pointer on the brass strip underneath the box.

This method is open to many objections. It is a nuisance, in the first place, to have to measure so many distances, and to focus upon each separately; then it is quite difficult to get these foci accurately without a magnifying glass; and even with a glass the eye becomes so tired after a few trials, that it is often incapable of correct judgment, and one cannot tell whether the focus is sharp or not.

A very little mathematics here will aid us wonderfully. And here is the formula:

$$D : f : : f : x;$$

where D is the Distance (with a "big, big D" for emphasis) in inches of any object from the lens, f the focal length for parallel rays, and x the distance of the required point beyond this principal focus mark, to which the pointer must be moved. Expressing this formula in words, we have the following most useful

RULE.—*The equivalent focus of a lens is a mean proportional between the Distance of any object and the distance through which the ground glass must be moved to bring that object into focus.*

Now for the application. (For, as Captain Jack Bunsby sagely remarks, "the bearing of this observation lays in the application on it.") We know that the focal length of our lens is ten inches. We carefully mark this upon the index plate of our detective camera. Now where shall we place the mark for an object say one hundred feet (twelve hundred inches) away?

$$1200 : 10 : : 10 : x$$

$$1200\,x = 100$$

$$x = \tfrac{1}{12}$$

ANS. We must put this mark exactly one-twelfth of an inch beyond our equivalent focus mark.

Again. Where shall the 40-feet mark be drawn?

$$480 : 10 : : 10 : x$$

$$x = \tfrac{5}{24}$$

ANS. Five twenty-fourths of an inch beyond our equivalent focus mark. And so on for objects at any distance, and for lenses of any focal length.*

This method is *accurate*, far more so than the rough approximation of ordinary experiment. And we would see many more really sharp instantaneous pictures if it was put into universal practice by "detective" photographers.

We have hitherto taken for granted a knowledge of the exact focal length of the lens. Every well-regulated photographer ought to know this any way. But suppose he does not. Our rule works just as well notwithstanding; it doesn't mind a little thing like that. We would then proceed as follows (and this is perhaps the most generally practicable way):

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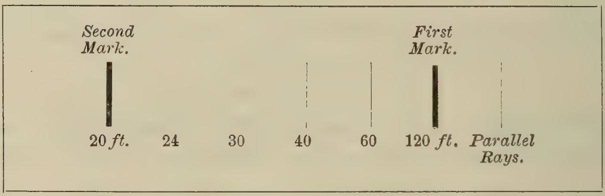
*Strictly speaking, as will be shown in another article, the distance of objects should be measured from a point one focal length in front of the lens, instead of from the lens itself; but this space is so small comparatively, that it can be neglected for any objects outside of 20 feet. Inside of 20 feet, however, it should be taken into account and allowed for, using the formula $D - f : f : : f : x$.

1. Place some object—a printed page is best—120 feet away; focus sharply on that; mark where the pointer stands on the index plate.
2. Place the object 20 feet away; focus; mark on index plate.
3. Divide the space between these two marks into five equal parts by drawing four lines at equi-distant intervals.
4. Lastly, make another mark, at the distance of one of these intervals, beyond the 120-feet mark, *i. e.*, towards the lens.

This gives us seven marks altogether, which will be the precise places at which to set the pointer to have a sharp focus on objects distant 20, 24, 30, 40, 60, and 120 feet, and the distance of parallel rays (in other words, the "equivalent focus"), *e. g.*,



This figure (exaggerated a little for the sake of clearness) shows this so plainly that further words are needless.

◆

[*From Manuel de Photographie et de Colcographie.*]

PHOTOGRAPHY UPON WOOD FOR WOOD-CUTS.

BY V. ROUX.

Preparations for the production of the collodion positive.—As the photographic image has to be removed from its support, I recommend the use of plate glass, the ordinary glass metalizing in the course of the manipulation, in consequence of which it will cause partial adherence of the film during the transferring process, whereby the whole work would be spoiled. The cleaning of the glass plate in this process is important, and the easy removal (stripping) of the film from the glass depends upon this. For this purpose the plates are placed in a bath consisting of

Bichromate of potassium	2 kilo.
Nitric acid	1 liter.
Water	5 liters.

They are kept in this solution for 2 to 3 hours, soaked in running water, wiped off with a piece of fine and clean cloth, and rubbed with a cotton tuft which previously has been steeped in the following solution:

Alcohol, 36 degrees	50 c.c.
Dry iodine	2 grams.
Water	50 c.c.

Finally they are rubbed once more with a fine clean cloth with a circular motion of the hand.

The collodion.—The collodion required for this purpose is prepared from silky nitrated cotton, such a collodion admitting a quicker and more complete coating of the plates, without the film becoming so thick as to disturb the engraver during his work. The following preparation is to be recommended:

Alcohol, 40 degrees	500 c.c.
Ether, 65 "	500 "
Iodide of ammonium	4 grams.
Iodide of cadmium	3 "
Bromide of cadmium	1 "
Nitrated cotton	8 "

This has to be made at least twenty-four hours before use. The cotton is, as well as the iodides, first dissolved in alcohol, and the ether is added after complete solution of the same, letting the collodion ripen until it is used. If circumstances require it to be used immediately, it is better to filter the collodion through paper or cotton.

Silver bath.—The quantity of iodides and bromides used for the collodion being small, the silver baths employed are relatively weak, and sufficiently saturated and acidified to give brilliant pictures.

The following formula can be applied at any time of the year:

Nitrate of silver (cryst.)	60 grams.
Pure nitric acid, c. p.	10 drops.
Distilled water	1 liter.

To sensitize the bath at once, about 5 c.c. of the iodized collodion are added after solution of the nitrate of silver. It is left to ripen for about an hour and then carefully filtered. The bath is then ready for use with the maximum of its sensitiveness.

(*To be continued.*)

A FLORIDA MOSAIC.

BY MARCUS H. ROGERS.

"Mosaic" seats himself in a very high place
And tunes his guitar, then opens his face
To join in the chorus of Florida's praises—
Of sport that she gives; of fruits that she raises;
Of the 'gator, the pine, and picturesque palm—
His pæans of praise, a photographed psalm,
He sings some in earnest, a little in jest,
And mixes the meters as pleases him best.

First comes, under sail, the boat Illinois,
With room for our party, two girls and three boys;
Cap'n Dick at the helm, a competent tar,
And we sailed underneath a fortunate star.
While friends left at home were "all in a shiver,"
We basked in the sun on the Indian River,
And cruised for a month, in mid-winter time,
In summer-like weather of that genial clime.

Near the garden of Eden the 'gators were thick,
And one sought for lunch the girl we called "Chick."
I grabbed my camera, George his gun,
And 'Gus starting on, told the ladies to run;
But, facing the danger in silence profound,
The ladies they stood as if glued to the ground.
The rifle missed fire, but I got a "shot,'

And that awful 'gator lay dead on the spot!
[They stood still from fear—We learned, when too late,
They feared if they ran, they'd run off the plate!]

Below is our boat when moored to the shore,
And a 'gator crawled up, to return no more.
That 'gator when shot just measured six feet,
But the shooter he thinks it uncommonly neat
To say 'twas a dozen ! [The writer confides
That when he measured, he measured both sides!]

Next follow two boys—one in smiles, one in tears,
One glad to be "took," one o'ercome by fears.
Just think of this coon if your pleasure flags,
How easy it is to be happy in rags.

The sorriest sight in this land, Yankee Doodle,
Is a woman bestowing mother-love on a poodle.
They do better South—the shame is no greater—
"The Florida poodle" is a sweet alligator!

Next Eden we reach, as we journey down—
Not the Eden of old, but a Florida "town;"
A "town" of one house, post-office and store,
What need have they there for anything more?

Just over the river, as onward we go,
We find a rare man called "Portuguese Joe."
A man of quaint speech, both honest and true—
His cocoa-nut trees are seen in the view.
With dogs and "chickeenas" he lives there alone,
Happier far than a king on his throne.
Lawyer, doctor or priest get no share of his pelf—
"The doctor him die! Him no cure himself!"

At the top is a house, palmetto-thatched,
Whence Uncle Sam's mails are weekly dispatched.
It stands in the river, on a "gem" of an isle,
Not a neighbor is found in many a mile.
The man from the North, with Arcadian ways,
Is truly the monarch of all he surveys.

"The style of the road," as seen in the South,
Is a little old steer, with bit in his mouth.
The wealthiest blacks can ride in such "chaises,"
While the poor—you know what the phrase is—Can walk.

St. Augustine's relic, the famous old Fort,
The amateur thinks will furnish him sport;
But a soldier on guard commands him away,
And threatens arrest if he does not obey.
There's fun in the feat, to say nothing more,
In taking a fort without spilling gore;
But think of the fun—what man could forego it?—
In "taking a fort" and not let them know it!
"How did I take it?" I'd set up my kit,
When the soldier came out and told me to quit.
I thought he was joking—he said I must stop;
The plate was in place, I just touched the drop,
And slowly complied, but feeling elate,
I'd taken the fort on a quick Stanley plate!
He said he did nothing, day after day,

But, standing on guard, "drive fotoggers away!"
"Mosaic" suggests to the powers that be,
A much better way, as all will agree:
Give the soldier relief—it will be a boon,
And commission as guard the "man in the moon."

The Villa Zorayda, of Moorish design,
Where "home" and "Alhambra" seem to combine,
Is one of the chief of St. Augustine "sights,"
A castle in shell from Arabian Nights.

There's seen in the South, wherever you roam,
The idealized cot, "The Old Cabin Home."
The chimney outside, made of cobbles or sticks,
Only Crœsus himself would build it of bricks.
One feature alone the tiny view lacks:
An average array of infantile blacks.
But many a house of fashion and wealth,
Knows less of joy, of freedom and health.

SILVER PRINTING ON ALBUMENIZED PAPER.

BY ELLERSLIE WALLACE.

[Read before the Photographic Society of Philadelphia.]

I BELIEVE myself justified in making the assertion that photographic printing has not essentially changed during the last twenty years. If this be true, it might seem to be an easy matter to deduce such principles from the practice of the best operators as would lead to the laying down of fixed rules from which no departure could be made, save at the almost certain penalty of failure in one or another of its forms.

Practical experience in photographic printing, however, as well as a knowledge of the practice of others, would rather teach us that success in this direction is hardly to be obtained by reducing, or attempting to reduce, the matter to scientific principles, but that empiricism (if I may use the word) is both easier and safer. I doubt whether there is a single operation in the whole routine of silver printing that has not been fought over by the advocates of different manners of working; the result being finally left undecided.

Remembering that prints are really a secondary product of photographic manipulation, I think that the reason of this clashing of opinion, to which I have just alluded, may be found in the character of the negatives used, in the paper, and in the whole practical routine of handling. As full consideration of these three factors would be impracticable here, let me generalize my remarks, rather than attempt to give rules for working.

As far as we can gather from our knowledge of early practice in silver printing, it seems pretty clear that the fine effect in the print was formerly sought for by using a strongly salted paper, floated on a correspondingly strong silver bath, and used without fuming with ammonia. The negatives were also probably much more intense, or had greater contrast between light and shade. The paper itself was thicker. Inasmuch as it was an expensive matter to work silver baths of from 80 to 100 grains per ounce, the quantity of soluble chloride in the paper was reduced together, with the strength of the silver bath. It had been definitely ascertained that over and above the quantity of nitrate of silver necessary to convert the chloride, a certain excess of silver was indispensably necessary.

As is so often to be remarked when changes take place in scientific practice at large, the pendulum swung so far in the other direction that baths of even 20 to 30 grains per ounce were advised, as well as the addition of other soluble nitrates which were claimed to supply, in part at least, the place of the silver salt. Such ideas are now forgotten, as they well deserve to be. The strength of the bath for ordinary work might be taken at say 50 grains per ounce, reducing to 40 in hot weather, and perhaps increasing to 70 in cold weather or weak light. I must again beg you to remember that I am here making no attempt at a regular formula.

The failures arising from disproportionate strength of bath to paper would be more noticeable in the case of an unduly weak solution. The paper would print slowly, and lose much of its strength and brilliancy in toning and fixing, while the only troubles to be anticipated from too strong a bath would be an increased tendency to discolor (particularly in warm weather), and perhaps to the formation of what are technically known as "tear-drops."

The characteristics of a perfect negative for printing would be difficult to define closely, even if we had the negative before us, and of course still more so in words. Laying aside all technical imperfections, we can say that the perfect negative is the one that will give a complete scale of tone (or light and shade) in the print, varying from black to white.

Where prints of the finest quality are desired, it is of every importance that they be printed in a light whose actinic power will suit the negative and the paper.

The well-known rule of printing strong negatives in a strong light and weak negatives in a weak one, should always be borne in mind. I have found it better to subdue the great strength of the sun's light by pasting layers of white tissue paper over the printing frame in the case of weak negatives, rather than to leave the frame open and print in diffused light. By following this plan I have often obtained vigorous prints from negatives thin enough to give very effective solar enlargements on albumenized paper. Of course this is a tedious operation; and I do not by any means advise that negatives should be made so thin as to require this treatment. But, as any landscape photographer who has had experience with the inconstancy of Dame Nature and chemicals will know, the negative does not always turn out just as we might wish. I have also been led to believe that the strength of the light in which the print is made has an influence upon the tone of the print. And let me here remind you of the great law in photography, that a weak light acting for a lengthened time upon photographic tissues, gives very different results from a strong one acting for a short time.

The strength of the silver bath I have already spoken of, but let me refer to it again merely to say that I believe fully in the principle of using weak baths for weak negatives and strong baths for strong ones.

(*To be continued.*)

Though I am not doing anything in photography just now, yet I would not give up the Bulletin, as I consider it too fine a publication to lose any of them.

C. H. Haberer, Ky.

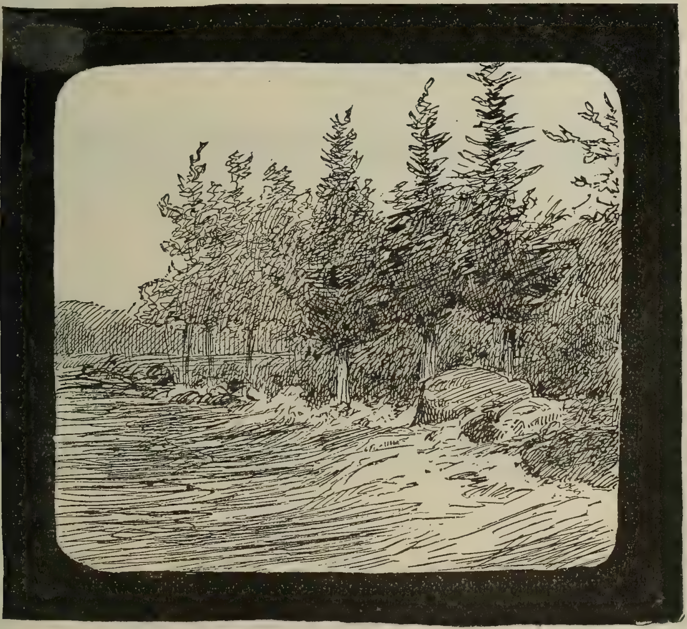
COMPOSITION IN PHOTOGRAPHIC PICTURES.

BY J. WELLS CHAMPNEY.

(*Continued.*)

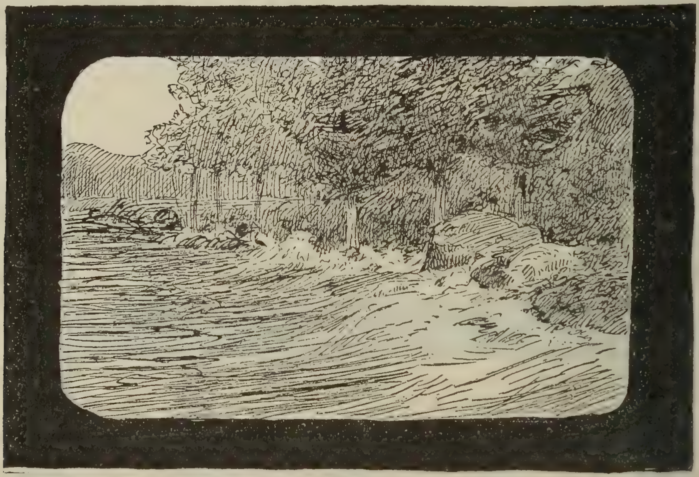
Now in this picture we cut off the top and the bottom there [indicating]. That which you see at the top of the picture is a very distressing element, because it forces attention and comes against the mass of white, and you cannot enjoy it as you could if the mat were placed in another position. I also feel that our attention and interest is attracted too much by this mass of foliage below, so let us cut it off and see.

This will give me an opportunity to remark upon another element in landscape composition. I will draw that back a moment, calling your attention first to a repetition of the straight line not quite in the center of the picture, and to the left hand pier of the bridge, and the reflection of the mass of foliage, carrying your eye down in a straight line, cutting the picture in two. You will see my object and reason for covering up much of the foreground. It is in order that we shall get a varied line near that portion of the scene where the eye naturally falls.



Now push it until the proportion on one side of the bridge is more than the other—there, say. Now why there rather than further on? Because the outline of the foliage as it is cut off by the mat on the right or left had better, as a rule, be higher on one side. Now I will draw the mat back and let you see it in this position, and see whether we agree as to the question of choice in presenting the view. [Changing mat.] Now, that is far better. That is charming. The position, the balance, the mass of black, the amount of white, the silhouetting of the trees against the white, the gradations of half-tints throughout the picture are very beautiful, yet possibly there is a little too much interest in the foreground. I think that will gain by cutting. [Here Mr. Champney placed the mat so as to cut off a piece of the foreground.] I will cut off a little piece of this foreground, which is very interesting as a foreground, but too interesting to give value to the picture. Now that gives what pleases most, a sense of liquidity in the water, and a beautiful perspective throughout the entire picture.

Here is a picture about which a gentleman spoke to me a few moments ago, and said he could not choose any other place, so that we are not going to criticise the place on which he stood. Following out the thought of one of the pictures previously shown, what is there in that picture which interests us? To me it is the washing up of the water against the rocks. The silhouetting of the trees against the sky proves to me a disturbing element, the beauty of the wave being interfered with. [For illustration, see preceding page.]



If it is cut off in that way, as shown above, it is much better. You see how quickly the eye goes to that which seems to me to make the picture worth taking.

[Mr. Champney then showed a picture of a tent on the shore of a lake. For illustration, see preceding page.]

That is one of the Californian scenes taken by an amateur, who has furnished our society a dozen or twenty very beautiful scenes. From the standpoint of composition the repetition of the form of the tent and of the tree above is an element of ugliness, no matter whether the tree is very beautiful and very perfect or not.

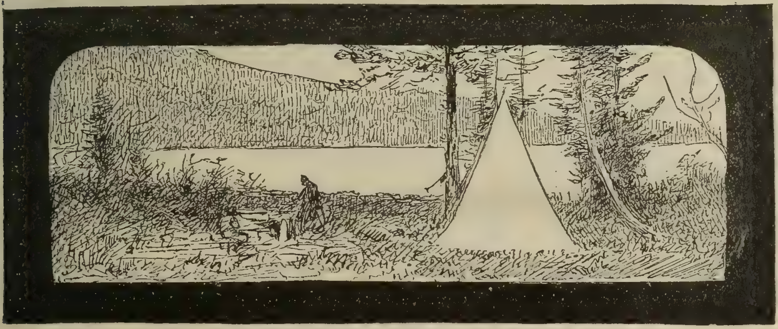
I think it would be better to cut off the top of that picture.

[Mat was then placed over picture, producing the effect given in cut below.]

Let us speak of form in the relation of lines to one another, and the masses of black. The pyramidical tent there ought to be broken. The long line carries your eye across the lake. The descending line of the hill is a very pleasant one.

The black mass of the trunk gives value to the scene. There is a very exquisite foreground [indicating], full of gradations as you see. Now I will take the top of that out and see if it is as pretty.

An upright might also be made of that picture.



[A new scene, representing a stream surrounded by lilies and woods, was then shown].

Now this composition is rendered pleasant because it has a very interesting foreground of leaves, but you cannot see them because of your landscape; or, rather, you cannot see the landscape because of them. That would be the argument I would make; and again, the repetition of the form on the left of those trees duplicated so perfectly in the water is another element that is disagreeable.

Let us change it and have more water and less sky.

Now that is very lovely from another standpoint, and really to my mind it is the best. You have now the full value of a clear sky; the repetition of that sky in the water; a suggestion of a very interesting foreground; and a lovely group of trees.

(*To be continued.*)

INCLOSED please find money order for renewal of my subscription for another year. I think a great deal of the BULLETIN, and look forward to its coming with pleasure. F. F. BUELL, Cal.

THE VERGARA DARK SLIDE AND IMPROVED WOODBURY TISSUE.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York.]

Having recently received from the Woodbury Company some of their newest tissue, I have experimented to a small extent with it, and find that it works very satisfactorily.

The following are some of the points claimed for the peculiar dark slide and tissue of the company, as stated in their circular.

VERGARA'S PATENT DARK SLIDE.

In connection with their tissue, the company announce an entirely new dark slide, which will be sold wherever the paper is obtainable. The advantages in this slide are that the paper is readily inserted and as readily removed; that the weight of one slide with two papers is about one-half to one-third the weight and cost of the ordinary double dark slide with two glasses; that the new slide can be easily fitted to existing cameras; that the register of the focusing glass is the same as with the ordinary slides; and that tables are affixed to the shutters for recording necessary details of exposure, etc., for subsequent reference. It is filled for two exposures by the insertion of a shutter—no loose parts and no hinges.

INSTRUCTIONS FOR USING THE SLIDE.

Draw out the central division, insert it between one of the double papers from the box, and return the whole to the slide, which is then charged for two exposures. Be careful the paper does not advance on either side beyond the edges of the central division.

In case that, for instance, it should be desired to take a half plate, or any other smaller size under a whole plate picture in a whole plate slide, paper of the required size may be cut and inserted in it, either by doubling it in two, or turning up the edge.

THE WOODBURY TISSUE.—GENERAL REMARKS.

The company claim that the adoption of their tissue will greatly facilitate the operation of the photographer alike in the field, in the studio, and in the dark room. The paper is exceedingly easy to manipulate, and there are no extra operations to perform. The results obtainable upon it are quite equal to the finest glass negatives, from which they are not to be distinguished, except in the difference of weight and thickness between the two materials, paper and glass. There is no treatment with castor oil, vaseline, or kindred substances; negatives on the tissue will print in the sun without becoming tacky; and there is no risk from breakage, and no trouble in the storage of plates. It is invaluable for carbon work, and being printable from either side, reversed negatives are not required. In the field there is, comparatively speaking, no weight to carry; a small packet in the coat pocket will contain the necessary supply of "papers" sufficient for a holiday trip. The negatives print as quickly as those on glass, and there is this paramount importance in the negative on the tissue over that on the old dry plate, and that is of vital importance to the printer: the dust will not adhere to the Woodbury tissue as to the gelatine negative or plate, with the consequent speedy destruction of its delicacy, and the waste of time employed in print spotting. Add to these advantages the facilities in developing the tissue, and the rapidity with which negatives taken upon it may be fixed and washed in the same manner as a batch of ordinary prints, and the inestimable value of Mr. Woodbury's discovery becomes apparent to every photographer.

Apropos of the dark slide, we are all too familiar with the troubles attendant on the use of carriers and stretchers for paper negatives. In the company's slide these drawbacks do not exist. The insertion of the paper is the work of a moment, and the point for the photographer to consider is which is the best outfit for his day's work, three or four of the company's slides containing six or eight papers; a corresponding number of the ordinary slides filled with glass plates, and the unnecessary weight to be carried increased from three to four times; or one of the equally weighty and cumbrous roller slides, in which the whole of the weight has to be carried about, whether one picture is taken or the whole twenty-five. As a matter of fact, one of our whole plate cameras and six slides weigh just eight pounds; any other whole plate camera and six glass slides weigh over twenty pounds. Compare the confusion in which a photographer would find himself if he had, for instance, ten pictures on a roll of paper, and wished to develop only one; the risk of finding half the roll of paper loose on one side and half on the other; to say nothing of the almost absolute impossibility of finding any particular picture in an undeveloped roll of paper, against the facility under the company's arrangement with which the right slide can be selected and the picture taken from it by reading the particulars recorded on the table.

FORMULA FOR ADAPTATION OF BEACH'S DEVELOPER.

No. 1.	
Sulphite of soda (crystals)	4 ounces.
Distilled water (warm)	4 "
When cold, add	
Sulphurous acid	4 ounces.
Pyrogallic acid	1 ounce.
No. 2.—A.	
Carbonate of potash	3 ounces.
Distilled water	4 "
B.	
Sulphite of soda	2 ounces.
Distilled water	3 "
No. 3.	
Bromide of potassium	1 ounce.
Water	10 ounces.

To develop.—To each ounce of water add 30 to 50 drops of No. 1 and 20 to 40 drops of No. 2. If action ceases before having obtained the desired density, add 10 drops of No. 2 per ounce, or more, until development is complete.

If there be doubt as to whether exposure has been excessive or not, it is well to commence development with a solution containing, besides the above mentioned quantities of No. 1 and No. 2, 10 or 15 minims of No. 3 to each ounce.

If there has been over-exposure, the negative will nevertheless come up vigorously. If the delay in the appearance of the image prove that under-exposure exists, then the restrained developer must be substituted by a normal one.

If there is a number of negatives to develop, and, as is not unusual in the case of landscape work, there is considerable doubt as to the correctness of exposure, it will be a good plan to prepare two dishes, one with and one without the restrainer, and by immersing each negative first in the restrained developer, it will then be difficult to make a mistake.

INSTRUCTIONS FOR DEVELOPMENT.

The formula for development given on preceding page (founded on Beach's) is found to give the best results by far with the tissue.

The negative should be immersed in water for a few seconds, pouring half the developer into another tray, in which the negative is then submerged, pouring the remaining half of the developer over it.

Care must be taken to prevent the presence of air bubbles at the back by turning the tissue over and rocking the dish; in this way bubbles on the front and back will be prevented from forming.

The process of development is beautiful, and little practice will secure uniform intensity in negatives.

After development, wash well, fix, and wash thoroughly again to eliminate the hypo (no alum bath is required), then suspend to dry. The wet tissue will stick to the edge of a shelf. Care should be taken not to touch the tissue with the fingers during development and washing too roughly, or marks may result. The camel's hair brush may be used. Also be careful that the tissue does not get under the tap, unless it be in a dish.

After printing, the negative may be left for a couple of days in the printing frame between the glass and a piece of card-board, or rolled up tightly on a roller when dry.

The paper is made transparent or translucent before coating with the gelatine emulsion by immersing in a bath made as follows:

No. 1.

Benzole	32 ounces.
Gum damar	16 "

Mix well and let stand for twenty-four hours.

No 2.

Benzole	2 ounces.
Gum elemi	½ ounce.

Mix well and let stand for twenty-four hours.

Nos. 1 and 2 are now thoroughly mixed and carefully filtered.

The sheets of paper to be rendered transparent are immersed in the bath one by one so as to thoroughly cover every part, and are then left to soak for two or three days. These, when removed, are hung up to dry in a room heated at a uniform temperature of 80 degrees F.

The resulting negative appears to be very soft, and absolutely free from grain.

ART IN PHOTOGRAPHY.

BY ELBRIDGE KINGSLEY.

[Read before the Photographic Section of the American Institute.]

To talk of Art in Photography, or Art in general, with any degree of authority, I am disposed to regard as an absurdity. Like all great principles affecting the human race, the Art idea is so interwoven into the traditions, the feelings, and spiritual nature of mankind, that to search for it *purely* with reason and intellect, is sure to be barren of result. The subject is so vast, that humanity, by putting out all its feelers, can only catch shreds and patches of infinite possibilities; or, can only pick up a few shells upon the shore, to toss back into the sea the moment brighter treasures appear.

Any profession or pursuit can be made an Art, provided the worker therein, has the *mind* to make it so. And so sure is this great law underlying *all* human effort, that the chickens of *every* man's brain are *bound* to come home to roost. Every act and expression is an exponent of the mind behind, so that we have, not the *thing* produced, but the mind *itself.*

We can take to ourselves all the inventions of modern science, with unlimited capital and facility of execution, and yet be fearful of a man that can think more broadly and probe deeper than ourselves. We had rather patronize a person of this sort behind his back. It is much easier. Also, we can feel *very comfortable* and complaisant in the presence of a *cipher.* We can take our measures with ease and certainty, and both parties be mutually happy and content.

Hence follows the necessary conclusion. The mind first, and the means afterward. In fathoming any man's life-work, don't ask *how,* but *what* is he trying to produce. Get inside if possible and touch the longings and ambitions, and your hand is on the key that will unlock all mysteries. Steal the *method* and you shut the door in your own face by having it replaced by something better before you can use it.

With these thoughts, as preliminary, we can meet the question fairly, and ask "What is Art in Photography?" and answer it in the same breath by saying, that it is superiority in any department or direction where the worker is fitted by nature and training to excel. The question of the greatness of the quality is simply a question of the height of the fountain head. Given the problem—a human soul and a trained hand: the product is a personality of expression that is an Art of its kind, and cannot be replaced when death separates the thought from the matter. The reception of the *result* depends on the condition of the public mind which sits ready to pass judgment on all things, from a Raphael Madonna up to a Peach Blow Vase.

Hence it also follows in giving personal opinion and experience, it can only be in the line of my profession, which is engraving, and in the direction of my inclination, which is landscape. In looking back over the past there is little satisfaction, as there is the feeling that every experience brings a new and better way of reaching the result. There is rather the desire to say to the beginner:

"Don't plunge into the current, it leads to no resting place for weary feet, no end of satisfying accomplishment. The treadmill always has the eternal one more step to climb, and the restless victim treads it day after day intent upon an ideal phantom of the mind, which is always a dancing mockery just eluding our grasp."

As a help to reproductive engraving, Photography has taken a prominent place for the last twenty years. Formerly drawings were made directly on the block, and as the work progressed this was cut away, so that when the engraving was finished there was no guide to criticism. Now the drawing is made by any means the artist sees fit, and is photographed upon the wood any size desired, and the engraver must reproduce his copy. Thus Photography has been an important factor in the improvement of American Wood Engraving. There are several firms in New York who do nothing else but photograph upon wood for engravers.

But one of the most interesting features of Photography for its availability to non-professional men has been in the improvement of the Dry Plate processes.

Now everybody can make it useful in gathering material for every conceivable purpose. But we will confine ourselves as much as possible to one purpose, and see how far Photography will help us in getting pictorial material in Landscape.

Of course the aim, or the preconceived notion of what makes a good picture, will be different with every person, and that motive must, consciously or unconsciously, govern the instrument at every step. I have been surprised at the wide results brought home by different individuals, with the same camera, over the same ground.

In the construction of any work there can be no question of the necessity of making a framework before putting on the detail and finish. The framework in our case must be the relation of the large masses of the picture to each other, or the main *values*, as they are called. To do this, by any means whatever, as Nature can do it is an impossibility. In illustrating this difficulty, we will use the color scheme of the artist's palette, as a means of nearest approach to Nature's values.

The white of the painter's scale must represent the highest light, and black the darkest shade.

It is easy to measure your white with Nature's light, and see how much *below* in tone it is. A white handkerchief is not very light beside a gas jet, nor the jet very light beside an electric light, nor yet the electric light beside the light of the sun. And just the same shortcoming will be found in the dark shades. Nature's deepest shadows can make the painter's black gray and leave it far in the rear. And if it were possible to reduce a landscape to one color, or a monotone, there would be a greater range in its compass than all the colors of the painter's palette put together. If this be true, what can be said of the black and white scheme of the photographer or the engraver. The stops and keys of Nature's organ are of magnificent sweep and compass, and the best instrument to produce her notes that we can command is but as a penny whistle. We are knocked out in the beginning of the contest as completely as if struck by a bomb-shell.

Yet it is better to try (knowing the impossibilities) to work in harmony than to force one's way in direction of the most important laws. We can at least try to play our little pipe in tune, instead of hammering on one note from beginning to end.

Is it necessary to undertake a *contest* with Nature, either in form or values, when you know you will be beaten. Why, for instance, in photography should you try a deep blue sky, which is actinic, and a white snow-field together, when the *ouly* result will be a few straggling trees standing in empty space? Would it not be much better to choose a gray day, and get a suggestion of the subtile changes and undulations of the snow-field when Nature comes down from her brilliant moods and adapts a little to our compass?

(*To be continued.*)

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INCLOSED please find subscription to BULLETIN. I am delighted with the thoroughly scientific manner in which your journal is conducted, and hope that it may continue in the same line of progression.

JOHN B. MAY, Wis.

ON PHOTO-MICROGRAPHY.

BY W. H. WALMSLEY.

(*Continued.*)

Almost any make of gelatine plates may be used, though some possess the qualities best suited to this class of work in a much greater degree than others. Extreme sensitiveness, combined with density and strong contrasts are desirable, nay, necessary for most classes of subjects. For all delicate structures, especially finely marked diatoms, I find it much better to develop for detail only, resorting to after-intensification to obtain necessary density. By this means none of the finer lines or markings are obscured by too heavy a deposit, whilst the negative is quite as permanent as those not intensified, if it be first bleached in a solution of bichloride of mercury, and blackened by immersion in cyanide of silver, or a ten per cent. solution of sulphite of soda. Ferrous oxalate or pyro development may be used with equally good results. At first I favored the former, but of late years have, in common with most others, grown more and more accustomed to pyro, which, with carbonate of soda, has given me results uniform in their success, and of a quality leaving little or nothing to be desired. I use no restrainer, excepting the sulphite of soda in solution with the pyro, the resulting negatives being uniformly of a pleasant gray tone, entirely free from the yellow stains so often associated with the use of pyrogallic acid.

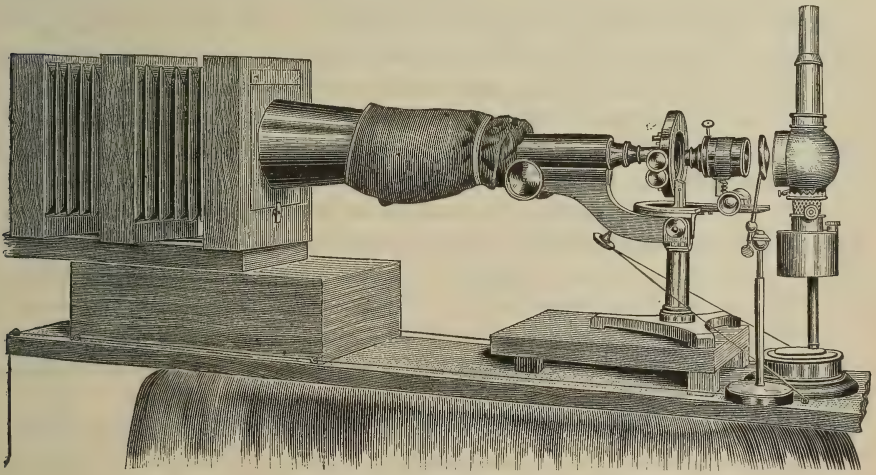

Photo-Micrographic Camera at Work.

For making prints, bromide paper is especially recommended. It can be used in the camera for enlarging or reducing; or be printed by contact, by day or lamp-light, as desired. It renders all delicate details better than albumen. The finished prints need not be mounted; for book illustrations they are perfect; whilst, finally, I think there can be no reasonable doubt of their absolute permanence. I will submit prints on both kinds of paper for your inspection and criticism; some of those on the bromide being contact and enlarged prints from the same negative. The smooth papers, A and B, of the Eastman Company, are recommended, and if a glossy surface is desired, it may be obtained by squeegeeing the print upon a sheet of polished hard rubber, from which it will peel off with a glazed surface when dry, as seen in the specimens now submitted to you.

Since the making of transparencies from microscopic negatives differs in nowise from those of other subjects, I shall not detain you in alluding to them, further than to repeat that reduction in the camera gives more satisfactory results than contact printing, and that this is the plan I almost invariably pursue, even if the negative be upon a quarter-size plate.

It adds very greatly to the scientific value of a photograph of any microscopic object if the exact magnification be measured and stated thereon. To do this separately with each exposure would entail an expenditure of time and labor that few would care to assume, but if each objective be carefully measured with the camera closed, and also opened to the full extent of the bellows, and notes thereof preserved, it will be an easy matter to calculate the exact amplification used with each exposure. This measurement is very easily made, A stage micrometer ruled in $\frac{1}{100}$ and $\frac{1}{1000}$ of an inch is placed upon the stage of the microscope, and the image thereof focused upon the ground glass, where the value of each division is readily determined. I would advise every one turning his attention to this branch of photography to make such a series of measurements at the outset.

As previously stated, any microscope with a joint for inclination of the body to a horizontal position may be employed in photography; but those having a short tube of large diameter will do better work than those with long ones. It is highly desirable that the rays of light, after passing through the objective, should be allowed to diverge as speedily as possible. Where they are confined to the limits of a long tube of small diameter, it will be found that only a small circle of light will be thrown on the ground glass when the camera is closed up short, and that it must be lengthened to a considerable extent before the entire plate is illuminated. In order to overcome this objection, I devised, some years since, a stand from which the compound body may be entirely removed, and replaced by a cone-shaped tube which flares away from the back of the object glass, allowing the image-bearing rays to diverge at once after leaving the lens. I have not found it convenient to present it to you in person this evening, but the photographs which I now hand around for inspection exhibit it very clearly.

Thanking you for your kind attention, I would once more present the attractiveness of this branch of photography, and urge upon you to try it for yourselves.

OBITUARY.

GEORGE W. CLARK.

We regret to hear of the death of Mr. G. W. Clark, who was for some years confidential clerk to our publishers. He passed away at Watertown, N. Y., on January 27th last, after an illness of long standing.

Mr. Clark was the son of the Hon. Jason Clark, and was born at Leraysville, July 27, 1827. He was married to Miss Mary B. Sterling, and about the same time entered our publishers' employ.

In this relation he remained with entire satisfaction to his employers until about 1872, when he went to Great Bend, where he engaged in the manufacture of paper with his brother-in-law, L. H. Mills, of Carthage, as President of the Great Bend Paper Company, and continued in the business to the time of his death. Mr. Clark was known by all as a man of blameless life, a generous friend, a valued citizen and a kind neighbor.

His name was always regarded as a synonym of business integrity. He was a man of positive convictions, and his life was marked by unswerving loyalty to what he regarded the best interests of the community and State.

For several years past Mr. Clark, while most of the time able to give his attention to business, has suffered at times seriously from impaired health, brought on by excessive and unremitting work.

About a year ago he was induced to go away for treatment, and as a result it was hoped that in large measure he had regained his health. But his condition during the last three months was so much worse, that his friends hardly ventured to hope for his recovery.

For most of the above facts we are indebted to the *Watertown Times*. He left a name amongst us that will long be remembered as that of a man of honor and uprightness, and we add our wreath to those of his sorrowing friends, to whom we extend our sincere sympathies in their bereavement.

PHOSPHORESCENT POWDERS.

The phosphorescent powder forming the basis of Balmain's paint, the luminous tablet of Warnerke's sensitometer, etc., is known to be in the main a compound of sulphur and calcium, though the exact mode of manufacture is not public property. M. Verneuil has lately given detailed instructions for manufacturing what he terms the most beautifully phosphorescent matter known. The formula runs as follows: Twenty grams of lime from the *Hypopus vulgaris* shell calcined, is pulverized and intimately mixed with six grams of sulphur and two of starch. To this mixture is added, drop by drop, a solution containing half a gram of subnitrate of bismuth, one hundred cubic centimeters of absolute alcohol, and some drops of hydrochloric acid. When most of the alcohol is evaporated, by exposure to the air for half an hour, the mixture is heated in a covered crucible for twenty minutes to a clear cherry heat. After pulverizing the mass it is again calcined for a quarter of an hour. If not too strongly heated, the product obtained is small-grained, lightly agglomerated, and easily crumbled. A new pulverization is to be avoided, as it tends to diminish the phosphorescence. The additions of sulphide of antimony, cadmium, mercury, tin, copper, platinum, etc., produces a variation in the color of the light, which varies from yellow-green to blue-green. Manganese produces an orange tint. Sulphides of cobalt, nickel, iron, and silver diminish the phosphorescence. It is thus seen to be probable that a powder might be devised which should act upon gelatine plates in exactly the same ratio as daylight.—*British Journal of Photography.*

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A NEW PHOTOGRAPHIC STOCK DEALERS' ASSOCIATION.

We have just received a telegram from Chicago in reference to the meeting of the Photographic Merchants' Board of Trade, which states that the old officers of the association were re-elected, and a new association formed, called the Photographic Stock Dealers' Association of America, with the following officers: H. Q. Sargent, *President;* J. C. Somerville, *Vice-President;* J. H. Smith, *Secretary;* R. B. Mullett, *Treasurer.*

ANTHONY'S
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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MEETING OF EXECUTIVE COMMITTEE AT PALMER HOUSE, CHICAGO, JANUARY 15, 1887.

President G. CRAMER in the chair. Upon roll call the following members responded: *President* G. Cramer, St. Louis, Mo.; *Treasurer* G. M. Carlisle, Providence, R. I.; *Members of Executive Committee:* J. Landy, Cincinnati, O.; W. V. Ranger, Syracuse, N. Y. Also the following past officers: W. H. Potter, Indianapolis, Ind.; H. McMichael, Buffalo, N. Y.; D. R. Clark, Indianapolis, Ind.

A communication was read from Secretary Bellsmith, dated Portland, Oregon, December 21, 1886, setting forth that business engagements had made it impossible for him to meet with the Executive Committee, very much to his regret, but that later he would return and would then be able to devote proper attention to the duties of his office. Letter ordered placed on file.

It was then moved and seconded that the Treasurer act as Secretary *pro tem.* Carried, and G. M. Carlisle, of Providence, R. I., immediately assumed the duties of Secretary.

Report of Treasurer was read and referred to the following Auditing Committee appointed by the chair: J. Landy, Cincinnati, O.; W. H. Potter, Indianapolis, Ind.; W. V. Ranger, Syracuse, N. Y,

Report of Secretary was read and referred to same Auditing Committee.

Committee on Incorporation made their report, and presented a Charter granted by and under the laws of the State of Illinois. The Charter was accepted, and the names Gayton A. Douglass, Charles Gentilé and E. L. Brand engrossed thereon were continued as Trustees until the next annual election of officers. A vote of thanks was tendered the committee who obtained a charter for the association.

A communication was received from Mr. Gayton A. Douglass, resigning as a Trustee under our Charter. Resignation accepted.

Moved and seconded that W. H. Potter, of Indianapolis, be elected to fill the vacancy, and Mr. Potter was duly elected a Trustee.

Mr. L. W. Felt was nominated as Local Secretary, and C. Gentilé and J. Landy were appointed a committee to wait upon Mr. Felt and learn if he would serve the association.

Motion was made and seconded that the Local Secretary be paid $250 for the performance of the whole duty of Local Secretary. Motion carried.

The committee appointed to wait upon Mr. Felt made a report to the effect that Mr. Felt said that his business interests made it impossible for him to serve the association as Local Secretary. Report accepted and committee discharged.

Resolved, That the prizes for exhibits of photographic work shall be awarded by a committee of five members of the association, to be appointed by the Executive Committee.

Prizes for Exhibits from Foreign Countries.

For best exhibit of portrait photography from foreign countries, one gold medal.

For best foreign exhibit of landscape or marine views, one silver medal.

Prizes for Exhibits of Members of the Photographers' Association of America, residents of the United States and Canada.

CLASS A.—For collection of portrait photography of any size (cabinet pictures not competing for Class C may be included in exhibits competing in this class).

One grand prize, diamond badge, for the best exhibit.

Four gold medals for superiority.

Four silver medals for excellence.

CLASS B.—For collection of large photographs; contact prints not less than 22 inches long; print not to be vignetted.

One gold medal for superiority.

One silver medal for excellence.

CLASS C.—For collection of twenty-four cabinets.

Ten bronze medals for merit.

Parties competing for this class cannot compete in any other class.

CLASS D.—Composition or genre pictures of any size.

One gold medal for superiority.

One silver medal for excellence.

CLASS E.—Landscapes.

One gold medal for superiority.

One silver medal for excellence.

CLASS F.—Best marine views.

One silver medal.

CLASS G.—Best interiors.

One silver medal.

CLASS H.—Best instantaneous views.

One silver medal.

CLASS I.—Best architectural photography.

One silver medal.

CLASS J.—Best photo transparencies.

One silver medal.

CLASS K.—Photography applied to science.

One silver medal.

The grand prize in Class A is open to all members of the Photographers' Association of America.

Winners of gold medals at the Convention of 1886 are eligible only to the grand prize in Class A this year.

Winners of silver medals at the Convention of 1886 are eligible only to gold medals or the grand prize this year.

Parties competing for the bronze medals of merit in Class C are debarred from competition in any other class.

The Secretary shall furnish each member of the Awarding Committee a complete list of all competing entries, certified to by the Treasurer that all such competitors are members of the Photographers' Association of America and not in arrears for dues.

The Secretary shall also furnish each of the Judges a schedule of prizes to be awarded and the necessary instructions as ordered by the Executive Committee, as follows:

INSTRUCTION TO JUDGES.

The Awarding Committee shall examine the entry lists and see that the rules concerning competitors in Class C are carried out, excluding them from competition in any of the other classes.

Each judge shall separately make his examination of the competing exhibits and decide upon the merits of the same, giving in each class number ten to the best, number nine to the second best, and so on, according to the number of medals offered.

The Awarding Committee shall have a special meeting before the Thursday morning session and combine reports, and come to a final conclusion by striking an average. Awards shall be made accordingly.

As all medals of one grade shall be of equal value, only the awards shall be reported in alphabetical order, and number of points received shall not be published.

RULES TO BE OBSERVED BY COMPETITORS FOR ASSOCIATION PRIZES.

First.—All competing exhibits must be from negatives made since the St. Louis Convention, June 28, 1886.

Second.—Any person desiring to compete for prizes must remit dues to the Treasurer, G. M. Carlisle, Providence, R. I., before making entries.

Members' annual dues, Two Dollars ($2). Non-Members' Initiation Fee and dues, Five Dollars ($5).

The Treasurer will furnish the necessary blanks for entries, which must be filled and forwarded to C. Gentilé, Local Secretary P. A. of A., Chicago, Ill.

All entries to be in the hands of Local Secretary fifteen days previous to the opening of the Convention.

All competing exhibits must be without frame or glass.

No exhibit will be received unless the freight or express is prepaid.

Resolved, The space allowed to any exhibit shall not exceed twenty-five linear feet; and each space allotted shall be properly filled with pictures, subject to the rules and under control of the Local Secretary.

Resolved, That the exhibition of photographs connected with our Convention be considered an art exhibition pure and simple, and in order not to detract from this standard, be it

Resolved, That no signs of any description shall be allowed to be placed in the halls devoted to the display of photographs, except one card to every exhibit, said card not to exceed 7 x 12 inches in size, and to contain only name and address of photographer whose work it represents.

Resolved, That any picture may have its title or subject neatly inscribed thereon, but nothing of an advertising nature will be permitted.

Resolved, That the Executive Committee shall be charged with the duty of removing all objectionable features. Carried.

Resolved, That one silver medal shall be awarded for the best improvement in photo apparatus or accessories produced since the last Convention on exhibition in the stock dealers' department.

This prize to be awarded by a general vote of the association in Thursday morning session. The highest number of votes wins the prize. Voting tickets for this purpose to be furnished by the Treasurer when dues are paid.

Competitors for this prize are requested to file their entries for competition with the Local Secretary of the Photographers' Association of America ten days previous to opening of Convention.

Moved and seconded, That twelve copies by typewriter be made of record of proceedings of Executive Committee, and a copy mailed to each publisher of photographic journals simultaneously. Carried.

A communication was received from W. H. H. Clark, of St. Louis. The same was read and, by vote, was laid upon the table.

COMMITTEES APPOINTED.

Treasurer Carlisle was authorized to obtain printed official stationery and the association badges.

Committee on Obtaining Medals.—W. H. Potter, H. McMichael, W. V. Ranger,

Committee on Foreign Exhibits.—E. & H. T. Anthony & Co., Scovill Manufacturing Company, G. Gennert, New York; C. Gentilé, Chicago, Ill.

Committee on Progress of Photography.—Dr. J. Nicol, Chicago, Ill.; J. Traill Taylor, London, Eng.; Dr. Herman Vogel, Berlin, Prussia; Dr. Eder, Vienna, Austria; Leon Vidal, Paris, France; Professor Borlinetto, Italy.

Resolved. During the business session the reading a paper or delivery of a lecture shall not exceed fifteen minutes. Passed.

Committee on Hotel Arrangements.—C. Gentilé, of Chicago.

Commitee on Railroad Rates.—Gayton A. Douglass, Chicago, Ill.

The committee appointed to audit the books of the Treasurer and Secretary found every dollar carefully accounted for, and desire to compliment those officers for efficient performance of their duties. J. Landy, W. V. Ranger, W. H. Potter, Auditing Committee.

Resolved. That W. V. Ranger be a committee of one to employ a stenographer. Carried.

Resolved, That the Permanent Secretary be appointed a committee of one to revise the stenographer's report of the Proceedings of the Convention of 1887 before they are given for publication.

Resolved, That one session be held from 9 A.M. until adjournment each day during Convention.

Resolved, That the art and stock department be closed each day from 9 A.M. to 12 M., to secure a full attendance at the meetings.

By and through recommendation of the Chicago photographers and stock dealers, C. Gentilé was nominated as Local Secretary of the Photographers' Association of America for 1887. Unanimously elected.

PROGRAMME FOR CONVENTION.

First Day.

Address of welcome.

Response by President and opening of Convention.

Roll call of members.

Reading minutes of last meeting.

Report of Standing Committees.

Report of Executive Committee by J. Landy.

Committee on Constitution and By-Laws.

Committee on Progress of Photography.

Appointing a committee to nominate officers for the ensuing year, who are to report next morning.

Selection of place for next Convention.

Annual report of President.

Miscellaneous business.

Second Day.

Reading of communications.

Appointment of Committee on Awards.

Unfinished business.

Report of Committee on Nomination of Officers.

New business.

Reading of Essays.

Discussions.

Third Day.

Reading of communications.

Unfinished business.

Report of Committee on Awards.

Report of Special Committees.

Voting for medal of progress for improvement in photo apparatus and accessories.

New business.

Fourth Day.

Reading of communications.
Report of committees.
Election of officers.
Unfinished business.
New business.
Discussions and papers.
Closing ceremonies.

A cordial invitation is hereby extended to all foreigners connected in any way with photography, to attend our Eighth Annual Convention at Chicago, Illinois, U. S. A.

The date of holding the Convention will be announced through the journals at the earliest possible day.

Adjourned.

G. M. Carlisle,
Secretary pro tem, Executive Committee.

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Photographer's Boy: "No, ma'am; we never take pictures unless you pay in advance." Old Maid: "But suppose I pay for them and don't like them? Seems to me a very queer rule; you ought at least to guarantee satisfaction." "Yes; but you see, ma'am, there ain't no way to keep pictures from lookin' like the people."—*Omaha World.*

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What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—C. S. B. writes: I see quite an interesting article in this month's Bulletin (January 8th), on page 10. The writer speaks of cupric chloride as a good reducer. Now, what puzzles me is cupric chloride. I can't find such a name in the Dispensatory. Will you please be so kind as to inform me through the Bulletin some other name for it.

A.—Cupric chloride is the name given to the green chloride of copper, obtained by dissolving black oxide of copper in hydrochloric acid. It was formerly called bichloride of copper, the white chloride (now cuprous chloride) being called monochloride of copper.

Q.—E. A. K. writes: Please give me, through the columns of the Bulletin, a good formula for printing on linen, and oblige.

A.—Size the linen with a solution of gelatine in water, two or three grains to the ounce. When the size is dry, sensitize as you would albumen paper, taking care not to let silver solution touch the unsized part of the fabric; then dry, fume, print, tone, and fix in the usual way. Wash at last with hot water.

Q.—F. C. S. writes: I am using Anthony's collodio-chloride for making portraits on watch dials, and it don't seem to work well. I put it on the dial in the evening and in the morning it is not dry or hard enough, and it was full of specks after printing. How long does it take for collodio-chloride to dry hard enough to print upon? If you can help me you will greatly oblige.

A.—Shake the bottle containing the collodio-chloride to thoroughly mix the salts; and albumenize the dials. The mixture should dry in half an hour.

Q.—E. G. M. writes: One of our neighbors having recently introduced a process of giving two poses on one print, we desire to know the manipulations of this for our establishment, hence we take pleasure in writing to you in this connection, begging you to favor us with full particulars.

A.—Two pictures may be taken on one negative in the following manner. In front of the lens of the camera, and out of focus, place an upright opaque screen of card parallel with the front of the lens board, and so fixed to a strip of wood attached to the bed of the camera that the card can be moved to right or left as desired. By using a small diaphragm and moving the screen to either side, two portraits can be made, one on the right, the other on the left, on the same negative.

Q.—Mrs. W. S. writes: Will you please inform me through the columns of the Bulletin, how to make a transparent negative for a lantern slide.

A.—Negatives are not used as lantern slides. Transparency plates are specially made by our publishers for making lantern slides. These should be used according to the directions that are to be found in the boxes. If you desire a negative to be used in the magic lantern, make your picture in the camera, using these plates. They give clear glass in the shadows if you don't over-expose.

Q.—S. S. C. writes: I inclose silver print. Would like you to state, through the Bulletin, the cause of the yellow stains around the edge of paper. I have been bothered quite a good deal of late with the same trouble.

A.—Your trouble is imperfect fixing; most probably by trying to fix too many prints in the same bath, or neglecting to keep them properly separated while in the bath. Don't use the hypo bath too long, and turn the prints over frequently.

Q.—A. G. M. writes: Will you please inform me, through the columns of the BULLETIN, if there is any better surface to retouch on than grinding on the film, or varnishing and then grinding; or turpentine and rosin. If there is any better way please inform me, or which is the best way of the three?

A.—The best way is to varnish with flint varnish (Anthony's works well), and grind surface with powdered pumice stone. This will give a very nice surface to retouch upon.

Q.—Mrs. C. S. writes: I use Anthony's flint varnish; will you kindly tell me how to make it thinner when it gets too thick?

A.—Use alcohol of ninety-five per cent. strength. This will thin the varnish at once if it is the correct strength.

Views Caught with the Drop Shutter.

IN our last issue we called attention to the removal of WILSON, HOOD & CO. to their new premises at 910 Arch street, Philadelphia. Since that time we have obtained some more particulars about their extensive establishment. Arriving from the street by the elevator we come to the first floor, 150 feet long, 24 feet wide, and with a ceiling 16 feet high. Here are found the comfortable offices of the firm; a large stock of photographic supplies well displayed and within easy reach to serve customers; accessories of all kinds; and complete outfits of dry plate apparatus; camera boxes from ¼ size to 18 x 22 always in stock, and in fact every requisite needed by the photographer. Another floor, above the one just described, gives ample room to carry a very large supply of plates, paper, cards, chemicals and the other materials constantly in demand by the fraternity. This enterprising firm have our best wishes for success in their new business home.

S. T. BLESSING, of New Orleans, and Dallas, Texas, sends us his new catalogue and price list. From an inspection of this we are satisfied that he is doing an extensive business both at New Orleans and Dallas. His bargain list is quite a long one, and contains many photographic requisites that can be bought at very reasonable figures.

BUCHANAN, SMEDLEY & BROMLEY, the well known photographic merchants of Philadelphia, are now fully established in their new store, which is one of the best in the East, with every modern appliance for the rapid and correct serving of their customers.

We are indebted to the BLAIR CAMERA CO. for a very handsome calendar for 1887. It is neat and artistic, and reflects the good taste of Blair Bros. and their associates.

GEORGE MURPHY, of Eagle Stock House fame, has removed from Mercer street, to the new store at No. 2 Bond street, New York, one door east of Broadway. Mr. Murphy carries a large stock of photographic supplies of all kinds, and in his new premises he will have special facilities for rapid shipment.

We regret to note that a fire at Bracebridge, Ontario, Canada, destroyed ELLSON'S PHOTOGRAPHIC STUDIO and dwelling-house on January 29th last.

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EVENING POST JOB PRINT, N. Y.

Indotint Process. Am. Photo. L. Co.

NORWOOD'S DINNER AT THE PICNIC,

By C. S. Bradford, Jr.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

FEBRUARY 26, 1887. Vol. XVIII.—No. 4.

A CURIOUS PHENOMENON IN DEVELOPING.

SOME time ago, while the Editors of the BULLETIN were working together in the dark room, and developing some rapid exposures, they noticed that on removing the plate from the developer and after slight washing, that on immersion in an alum solution the whole surface of the plate glowed with a phosphorescent light. As the phenomenon was a little startling, the effect was looked for and noted at the same period in the course of the making of each negative. It was then suggested that it would be a good idea to endeavor to ascertain the origin of the phenomenon. For this purpose some developer was mixed with the alum solution in the dark, but no phosphorescence was noted. The above operation was then reversed, and, after a number of experiments, it was found that when the developer is sufficiently weak, on pouring into it some strong alum solution, the phosphorescent light appears at the moment of mixing. This was as far as we went with our experiments, intending to return to the matter at some future date. But quite recently we see that others have noted the same phenomenon and various theories have been suggested to account for it.

At a recent meeting of the Société Française de Photographie, M. Perrot de Chaumeux, of Prissac, Department Indre, remarked that he had noted a phosphorescent light which appeared upon the surface of rapid plates on removal from the developer and immersion in a saturated alum solution. In this case the development was with separate solutions of pyrogallol and sodium carbonate according to the method of M. Audra, the pyrogallol having nitric acid in it instead of sulphuric; the plate being placed in them in the order given above, first pyrogallol then sodium carbonate. M. de Chaumeux states that the phosphorescence was not only upon the immersed plate, but also in the adjacent solution. At the same meeting, M. Pector said he had noted the same effect in using Balagny's pellicles at the moment of detaching from their supports, and another member, M. Londe, stated that he had observed the same light on developing the Balagny's pellicles. M. Molteni said that phosphorescence was also produced upon developing gelatino-bromide plates in an acid pyrogallol bath; while M. Stebbing said that cutting gelatino-bromide plates with a diamond produced a like result. The general impression appeared to be that the phenomenon is electrical.

Since the above observations were published, we note that English photographers have observed the same phosphorescent light during development. Among these observers we note Mr. John Daniell, of Llanelly. This latter experimenter does not think the phenomenon an electrical one, and we agree with him. Water and saline solutions are too good conductors of electricity to admit of luminous electric discharges in them. We believe that the effect is due to chemical action only, and is probably a combination of the pyrogallol with the alum. The fact that we produced the effect without using a plate in the developer, shows that it is an action due to chemical changes between the chemicals independent of the plate or silver haloids. The kind of developer used does not appear to make much difference; M. de Chaumeux used soda, while we used mixed soda and potash, and Mr. Daniell used potash as the alkali.

The observations of MM. Pector and Stebbing are of an entirely different character. The separation of the Balagny film from its support, and the cutting of the plate with a diamond are both capable of producing electrical phenomena. It is well known that the splitting of crystals of certain minerals produces electric phosphorescence at the moment of rupture, and the separation of the Balagny films is another phase of the same action, while the cutting of the plate with a diamond is purely friction, and we all know that produces electrical charges.

But no matter what the origin of this phosphorescent light, we think it is important to prevent its appearance during development. There can be no doubt that light of that character immediately upon the surface of the plate will produce fog. The plate is in an extremely sensitive condition, and any light not purely non-actinic would affect it. The method of prevention is a very simple one, and is to wash the plate pretty thoroughly before immersion in the alum bath. By this procedure all risk of fogging the plate from phosphorescent light is overcome.

If any of our readers have noted this phosphorescence during development and can add anything to the observations we have mentioned above, we shall be glad to hear from them, as the subject is undoubtedly a very important one in photographic practice.

EDITORIAL NOTES.

Information reaches us from Germany that the one hundredth birthday of the renowned optician Joseph von Frauenhofer, born March 6, 1787, at Straubing, and who died June 7, 1826, at Munich, will be duly observed and celebrated. Among the optical instruments produced in his workshop, is the giant refractor in Dorput, one of the finest and best ever made. Frauenhofer is well known for his indefatigable researches upon the spectrum, and the so-called "Frauenhofer lines" are named after him. As spectrum analysis is so closely united with and almost indispensable for photography in the future, his name should be held in kind remembrance. Honor to whom honor is due.

The question of light in the dark room is very ably discussed by Professor G. W. Hough on another page of the Bulletin, and we recommend all our readers to study the article. We shall return to this subject again as soon as we can find time for some experiments; at present we call the attention of our readers to the fact that the illumination of the dark room is also receiving much attention in Europe. Carl Sena, of Germany, says: "After I had tormented myself for a long time with the red and also orange light, I tried the brown one recommended by Schumann, and have found it excellent." He recommends every one to use it, and is satisfied with its superiority over all others. Now this is practically the light transmitted by the dark amber glass recommended by Mr. T. C. Roche, which we called attention to in a recent Bulletin, and we have not yet received any evidence against its use.

At a recent meeting of the Photographic Society of Great Britain, Mr. James Glaisher, F.R.S., was presented with a marble bust of himself, which bore the following inscription upon a silver plate: "Presented to James Glaisher, F.R.S., etc., etc., by Members of the Photographic Society of Great Britain, in recognition of eighteen years' devotion to its interests as President and as a token of their affection and esteem. January 31st, 1887." We are glad to note this appreciation of such a worthy man. Officers of societies usually get criticised too severely for mistakes they sometimes make, and little thought is given to the personal sacrifices made in serving their fellow members.

A story comes from the West that a Chinese has succeeded in making a photograph in colors. It is a picture of the Island of Enosbima, the sand, sky, cliffs, trees, and houses being all in their natural colors. The discoverer's name is Azurizawa Ryochi Nichome Sanjukanboz Kiobashi-ku. We should like to learn more about this process.

Dr. J. M. Eder recommends the following as a process for obtaining high gloss on albumen prints: A mixture of one part of wax with one to five parts of oil of turpentine is used ordinarily in place of cerate. A much higher gloss can be obtained by adding to this mixture gum or varnish. Complicated mixtures of this kind have been published, but without any particular advantages, notwithstanding their manifold compositions. The following cerate gives good results.

White wax	100 grams.
Gum damar varnish	4 "

Dissolved in 100 grams rectified oil of turpentine.

The mixture is put into a dry bottle. When too hard, a little oil of turpentine may be added. The damar varnish (solution of damar in oil of turpentine) causes a high gloss. The mixture is applied to the picture with a small rag. It requires a little more strength to rub it over the picture than the ordinary cerates, but gives a much better gloss to the albumen picture.

The Photographic Merchants' Board of Trade has probably held its last meeting. In the judgment of many of its efficient members it has outlived its usefulness. A new organization has been effected, under the title of "Photographic Stock Dealers' Association of America," membership in which is to be confined to dealers, and to that class of dealers whose chief, if not exclusive, business is in the line of photographers' supplies. The Board of Trade embraced importers and manufacturers as well as dealers; the new organization is to be composed of dealers only. We wish the Photographic Stock Dealers' Association of America great success in its endeavors to harmonize the conflicting interests of the trade, a consummation devoutedly to be wished. Mr. George Murphy, of New York, not R. B. Mullett, is Treasurer of the new association.

The Eye, of Chicago, says that amateurs can become members of the Photographers' Association of America by paying the dues, etc., which will make them competent to compete for prizes. Our amateur subscribers should send some of their work to Chicago next August and see how it compares with professional work.

At the School of Mines Photographic Society, of New York, on February 18th, Dr. L. H. Laudy exhibited a novel form of lime light apparatus, in which an ordinary photographic camera is readily converted into a magic lantern, or can be used for enlargements on gelatino-bromide paper. The construction is simple and the jet for the lime light is a great improvement on the ordinary one, being readily adapted to the use of either alcohol or house gas. The whole arrangement is a modification and improvement upon Dr. Laudy's apparatus which was described in the BULLETIN last year. It was used for the projection of a large number of plain and colored slides at the meeting mentioned above, and before a large audience.

THE St. Louis Association of Amateur Photographers is doing good work, and we have been favored with a list of its meetings for this year, which take place on Monday evenings twice a month. The Officers are R. E. M. BAIN, *President;* Rev. C. M. CHARROPPIN, *Vice-President;* W. W. WITHNELL, *Treasurer;* and JAMES A. SHERRARD, *Secretary.*

THE Second Annual Exhibition of the School of Mines Photographic Society, of New York, was held in the Museum of Applied Chemistry on February 17th and 18th, and a large number of pictures were exhibited. In our next issue we shall give an account of the work of the various members as there presented.

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[*From our Special Correspondent.*]

ENGLISH NOTES.

DURING January an unusual amout of snow has fallen throughout Great Britain, and our cameras have been dragged from the cupboards, where they lay hibernating, to depict nature under this—of late years—comparatively rare aspect. Yet how few good pictures of snow scenes we see! "Soot and whitewash" is the not untruthful description of most of them. To get detail and break up the white expanse which generally was the foreground, some wheel-tracks and foot-marks are invaluable. As for exposure, I generally give either one or two seconds with *f*-27. But a great secret lies in the mode of development; use a weak developer with about half a grain of pyro to the ounce, and get the picture out slowly. Snow-balling scenes are difficult; as a rule too many figures are introduced—three or four are plenty. Instead of making instantaneous exposures, train your models to remain motionless for a second or two, in whatever position they may happen to be, at the sound of your whistle. This is a useful hint for all work of this sort, and I know of many photographs of apparently "moving figures" that have really been secured by comparatively long exposures.

Orthochromatic plates are much talked of here. In January, 1883, the French firm of Attout, Tailfer & Clayton patented the use of eosine dissolved in ammonia, and added to gelatine emulsion or poured over coated plates "to get the relative lights and darks correctly in spite of varying color." This patent has lately been purchased by an English firm of plate-makers, and during the coming summer we believe plates prepared on this system will be largely used.

It is unfortunate, however, that such plates do not keep well; but means will probably be found to obviate this defect.

A fiery discussion is taking place as to the relative permanency, if any, of platinotype and gelatino-bromide prints, etc. The Eastman bromide paper is now largely used, and the contest between its advocates and those who swear by platinotype, or the "only permanent process fit for amateur work," is a lively and an amusing one. For my own part I believe that either method, if carried out with care, will give us pictures as permanent as their support, *i.e.*, as the paper upon which they are printed, and I do not see that we can ask for more. Twenty years ago, Thomas Sutton pointed out the permanency of developed prints as compared with those printed-out in the ordinary way.

From this it will be seen how important is the question of the purity of the paper on which our prints are made. Practically, all the paper used for photographic purposes comes from the little towns of Rives, in France, and Saxe, in Germany. But even the best paper yellows with age; and under the influence of light, moisture, and the various noxious gases invariably present in the air of our large towns, this yellowing may take place quite rapidly. The whole photograph has then a somewhat faded look; and the process, or the manipulator, is often blamed for what is really a fault inherent in the paper. For this reason prints placed in optical contact with glass, and protected at the back by a good frame and impervious backing, stand by far the best chance of retaining their pristine freshness.

Making lantern slides and photo-micrographs are just now the most popular avocations for the long dark evenings, and to these I must add enlargements on bromide paper. For these three classes of work ferrous oxalate is by far the best developer, although I see attempts are being made to replace it by alkaline pyro. What can be easier than to make saturated solutions of ferrous sulphate and neutral oxalate of potash respectively (let there be plenty of crystals at the bottom of each bottle, then the solutions are sure to be of full strength), and make your developer by pouring one part of the former into five of the latter. To the ruby liquid so obtained, add three drops per ounce of a ten per cent. solution of ammonium bromide. To make the ferrous sulphate solution keep, you should add two drops per ounce of strong sulphuric acid, otherwise it will soon turn yellow, being converted into ferric oxalate which, as a developer, is useless.

The growing popularity of photography is shown by the fact that Professor Dewar selected as the subject of the popular Christmas lectures annually given at the Royal Institution, "Light and Photography." In many of his striking experiments the lecturer employed an electric light produced from carbons of one square inch in section, and equal in intensity to 82,000 candles—a sort of little terrestrial sun in fact.

The makers of films are trying hard to produce a material which shall displace paper. The Woodbury film consists of paper rendered transparent by treatment with certain gums; but by far the most transparent medium that I have seen is "Pumphrey's Flexible Glass," which is probably a film of gelatine or collodion, or perhaps a layer of each, toughened it may be with chrome alum, and coated with emulsion. I think, however, that for general work, and more especially for sizes below whole plate, glass will always held its own and more. For travelers, and for large work away from home, the Eastman paper stands first in the opinion of TALBOT ARCHER.

DARK ROOM ILLUMINATION.

BY PROFESSOR G. W. HOUGH.

In a recent number of the Bulletin, the subject of dark room illumination was discussed. From some experiments made by the writer, he inferred that an erroneous statement was made, at the January meeting of the Photographic Society of Chicago, in relation to the Roche glass for dark rooms.

I believe all agree that a gelatine emulsion plate is least sensitive to the red rays. Hence any colored medium which, when examined with a spectroscope transmits other than red rays is unsafe; and as between two fabrics, transmitting an equal amount of light, the one which absorbs or intercepts everything except the red of the spectrum is greatly to be preferred.

It has frequently been stated by both English and American writers, that because the eye is most sensitive to yellow, it is the kind of light to use for the dark room, the inference being that we see just as well with only a fraction of the red light necessary for the same purpose. Now, unless the relative actinic effect of the two kinds of light on an emulsion plate is taken into account, the argument is of no value whatever.

Some months since I attempted to determine the relative sensitiveness of emulsion plates to yellow and red light, and for this purpose chose the cloth known respectively as cherry and golden medium.

As the cloth was similar in texture, and differing only in color, I presumed the same amount of light would pass through each, although for the purpose of the experiment this condition is not essential.

The source of light was a sperm candle, placed either in a lantern, or outside my dark room window. The seeing qualities for the two kinds of material was ascertained by examining a negative by looking through it, and also by reading printed matter. For these particular specimens of cloth the ratio, determined from a number of experiments, was as one to four and a half in favor of the yellow. Frauenhofer found the maximum luminous intensity in the yellow about ten times as great as at the C line. Comparing the luminosity of the whole area covered by the red and yellow respectively, the resulting ratio would perhaps be reduced to one-half the maximum. In other words, using yellow light we can see with about one-fifth the amount of red light required for the same purpose.

A Cramer lightning plate was exposed in my sensitometer at one foot distance with the following results:

Golden medium, equivalent exposure one second; cherry medium, equivalent exposure twenty-eight seconds.

In other words, the plate was twenty-eight times more sensitive to the yellow light than to the red. Combining the two results, so that the ability to see should be the same for both red and yellow, the final ratio is one to six in favor of the red as a protection to the plate.

In the same experiments, deep red glass was also tried with the same plate, giving an equivalent exposure of one hundred and eighty-seven seconds.

The time then required to fog, using a sperm candle at one foot distance, was for the three media respectively, as follows:

Golden medium	1	second.
Cherry medium	28	seconds.
Deep red glass	187	“

The deep red glass which I use, when examined with a spectroscope, virtually cuts off all except the red. The cherry medium, on the contrary, lets through a large portion of the yellow and green, while the golden medium extends the spectrum still further.

The Roche glass lets through most of the yellow and green—in fact the spectrum is almost identical with that given by the cherry medium.

A good deal of the ordinary red glass used by photographers gives a spectrum similar to the cherry medium, and is of course unsafe. A specimen of this kind of red glass, however, when compared with the Roche, was found to transmit more than twelve times as much light as the latter. Hence the apparent protection Mr. Roche and others have obtained, is due simply to a reduction of the light and not to any peculiar non-actinic properties possessed by the glass.

Having made a very large number of experiments with various kinds of glass, cloth, etc., I would recommend the deep red glass mentioned above. Such glass is upwards of one hundred and fifty times more effective with a given light than the yellow cloth, and is the best medium for dark room illumination of which I have any knowledge.

GHOSTS.

To the Editors of the BULLETIN.

IT sometimes happens that there appears in a negative, and directly in the center, or in a line with the axis of the lens, a more intense part, circular and varying in size according to the focus of the lens used. In speaking of such to many, the reply has almost invariably been: "Do not try to take a picture directly towards the sun." All well and good, but when you turn around and shoot in the opposite direction, and on developing the negative find the same objectionable spot, what is the reason for such? I have often had parties bring me a lens, saying that every negative they made would show the ghost, no matter how they pointed it. I have tried the lens in every conceivable way, except directly at the sun, and could not produce the ghost, do what I would. I have used lenses of every length of focus I could hear of, beg or borrow, and never but one did I find that would give me the ghost, and then under the following circumstances. I was photographing an article made of highly polished mahogany, on a very dark day, with single achromatic lens of 8¾-inch focus, on a 5 x 8 plate, reducing to one-third the diameter. I made six consecutive negatives, and as it was constantly growing darker, lengthened exposure from three minutes on the first one to six on the last. The detail in all was exceedingly good, but in the center of each negative was the ghost, 1¼ inches in diameter. With the same lens on a bright day, exposure about one second, diaphragm about $\frac{5}{32}$ of an inch, the plates were fully exposed and uniform in illumination from corner to corner. The tube was examined thoroughly and no possible chance could there have been for any reflections owing to shiny surfaces, etc., as all was a dull black. Another test on the article of one minute exposure was too much under-timed to give sufficient details, but showed no central spot whatever. Can any of your readers tell the cause and the remedy.

INQUIRER.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

NINE YEARS A TENT PHOTOGRAPHER.

By E. A. Bonine, *Los Angeles*.

Once upon a time I looked into a photographer's garret and there saw at least half a bushel of uncalled for photographs. There were babes and children, young men and their girls, old men and women. How many hard and weary hours of posing, developing, printing, toning, and mounting a photographer alone can tell.

These pictures tell me that that photographer was too good of heart, so he let the vulgar crowd—and here they were stowed away in a box—take advantage of him. It made me mad to think of it, and I propose to tell the craft how I have kept even with such people.

In the first place I required part payment when the negative was taken, but sometimes it happened that they would be in in half an hour, or they had no small change, or something or other would happen. Well, all photographers know that the photographs on which no deposit was paid are the ones about which trouble arises. Whenever I had pictures uncalled for in a reasonable time I put them in my show cases, turning them *upside down*. Upon being displayed thus, people would say, "Well! well! what's the matter with him; deadhead I guess?" and one would say, "His pictures are not called for yet." It almost always had the desired effect, and they either called or sent for their pictures.

I tented nine years alone, having neither partner nor hired man. Nearly five years were spent in Arizona, and I often wondered that I was not held up and robbed. Once I lost a garment. I had traveled two long days by wagon over the dusty alkali plains and was camped on the San Francisco River at a copper mining camp at Clifton. Half of the men you saw carried "guns" (immense pistols) around their waists. I saw a man shoot through the rim of a drunk's hat to see how close he could come to his head without hitting him. Times were rough then.

The nights in Arizona in summer are generally lovely; so warm that you are comfortable in your shirt sleeves to sleep on the top of a house or on your cot out-of-doors. One night, being quite tired out, I took off my pants and left them just inside the tent under the sky-light, which was open. The moon shone clear and bright. I slept on my blanket on the operating carpet, with my pistol under my head. There was a big dance in town that night, and I presume some rascal opened the side door, it being only tied with a string, and stole my pants. They did not contain much money, for I always hid my cash in the ground, but my watch, keys, etc. Fortunately I found a pair of overalls in the morning, so that I did not have to go out like a Yuma buck. I put my pistol up on the dark room shelf afterwards, and never had occasion to use it.

I was once camped in a little town on the Gila, Arizona. There was but one American young lady in the place, and of course all the boys were in love with her. I took five dozen cabinets of that young lady, for which the boys paid. There were dark-eyed senoritas, but they could not shine alongside the American girl.

Then I moved to a Mormon town, where I was treated very kindly, and well patronized; but it seemed heartless, cruel, hard, to see one of the leading men come one day with a wife and half a dozen children, and next day bring in another wife with another lot of children to be photographed. The passage of Scripture, "increase and multiply" is the one they seem most to practice. Seems to me if they would pursue quality, instead of quantity, it would be better for humanity. Not that the Mormon children are dull; they seem like the world's children everywhere, bright and happy. The community I visited lived upon the German plan, in a community, and had their farming land at a distance. I boarded while there with a leading man who came across the plains with Brigham Young. He had two wives; they often came in my tent together. I asked them closely about their belief in polygamy. They seemed to think it was the only right way, and got along well together, living at either end of the same house—which was divided by a partition—as nicely as two church mice. But the first wife, the most refined of the two, wore upon her face in repose, a sad, heart-broken look, in which my long practiced photographic eye read, "there's a story untold."

I thank men for telegraphs and telephones, for railroads and newspapers, for in them I see the glimmer of the good time coming when creeds shall perish from off the earth, and knowledge and truth shall be sought everywhere.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

Philip H. Delamotte, Professor of Drawing in King's College, London, was a man who combined artistic and scientific knowledge in a marked degree. He wrote the following books:

1853. "The Practice of Photography: a Manual for Students and Amateurs." 12mo. 150 pp. Frontispiece, woman and child. In the preface the author states that in the chemical part he was assisted by Mr. Thomas Delf.

Second edition, 1854. 166 pp. Frontispiece, Egyptian gods in Crystal Palace. Assisted in this edition by Mr. J. B. Hockin.

Third edition, 1856. 153 pp. Frontispiece, a waterfall. This is announced as "printed from a collodion negative," showing that collodion was not then so universally employed in photography as it was a year or two later.

Fourth edition, 1857. Post 8vo. Published by Low. 4s. 6d.

1856. "The Oxymel Process in Photography." Post 8vo. 32 pp. Illustrated. Chapman & Hall. 1s.

The author states that "the oxymel process recently announced by Mr. Llewelyn, of Penllergare, is undoubtedly the most valuable discovery in the art of photography that has been made since Mr. Scott Archer introduced collodion." The oxymel process was published in 1856. A glass plate was coated with collodion and sensitized in the usual way in a bath of silver nitrate. It was then rinsed in water and coated with oxymel (a mixture of honey and vinegar). After drying, the plate could be kept for weeks or months, and then exposed and developed in the usual way. The exposure required was about four times as long as for wet collodion, but the convenience of a "dry plate" was so great that this process found much favor.

Warren De La Rue, born 1815, was among the first to attempt the application of photography to the study of the heavenly bodies. His photographs of the moon have never been surpassed, and he has also rendered good service in eclipse photography. Mr. De La Rue is at the head of a great printing and stationery business.

1860. "Celestial Photography in England." 8vo. London. This is a pamphlet, probably a reprint of one of Mr. De La Rue's papers.

1876. "Astronomical Photography." See Report of Conferences, Scientific Apparatus Loan Exhibition, South Kensington. Vol. I, Physics and Mechanics, pp. 164–172. Chapman & Hall. 6s.

DR. HUGH W. DIAMOND was a veteran photographer, whose pleasure it was (about 1846) to induce Scott-Archer, the future discoverer of the collodion process, to take up the study of photography. Dr. Diamond was for many years a leader of the London Photographic Society, afterwards the Photographic Society of Great Britain, and editor of its journal.

1862. Reports of the Jurors, International Exhibition of 1862, at South Kensington. Class XIV, Photography, seventeen pages, quarto. Published for the Society of Arts by Clowes & Son. 21s.

CAPTAIN J. F. D. DONNELLY (now Colonel Donnelly, and Director of the Science and Art Department, South Kensington) is a member of the scientific corps of the British Army, the Royal Engineers.

1859. "Outline of the Chemical Theory of Photography, for the use of the Royal Engineers." 8vo. 24 pp. London.

JOHN WILLIAM DRAPER, Professor in the University of New York, was a member of that small band of distinguished men who, in the early days of photography, addressed themselves to the scientific side of the new art. His work in America may be compared to that of Sir John Herschel in England. His various papers were communicated, as soon as written, not only to American, but also to English journals, such as the *Philosophical Magazine*, and they have been most usefully collected in the following book:

1878. "Scientific Memoirs: being Experimental Contributions to a Knowledge of Radiant Energy." 8vo. 473 pp. 100 wood-cuts; portrait of author as frontispiece; plate of Rumford medal, etc. Sampson Low. 14s.

DR. JOHANN MARIA EDER, Professor at the Technische Hochschule, Vienna, stands in the very front rank as a scientific investigator of the phenomena of photography. Although still a young man he has written much, and done more.

1881. "Modern Dry Plates; or, Emulsion Photography." The English edition (translated by Horace Wilmer) edited by H. Baden Pritchard, F.C.S. 12mo. 138 pp. Piper & Carter, 5 Furnival street, Holborn. 3s.

1883. "The Chemical Effect of the Spectrum." Translated and edited by Captain W. de W. Abney. (Reprinted from the *Photographic Journal*). 12mo. 97 pp. Harrison & Sons, Pall Mall. 2s.

J. H. T. ELLERBECK is a well-known amateur photographer; he was formerly President of the Liverpool Amateur Photographic Society.

1883. "The Amateur's First Hand-book: a Complete Guide and Instructor in the Art and Practice of Modern Dry Plate Photography." 66 pp. 12mo. Illustrated. D. H. Cussons & Co., Bold Street, Liverpool. 1s.

Second edition, October, 1883.

Third edition, 1884, revised. 75 pp. 1s.

This elementary book is written in a very pleasant and simple manner.

Joseph Ellis was one of the pioneers of photography.

1856. "Progress of Photography; Collodion; and the Stereoscope." A lecture delivered at the Brighton Literary and Scientific Institution, November 13, 1855. 8vo. 62 pp. H. Baillière, 219 Regent Street, London; and Robert Folthorp, Brighton.

This lecture is described as a sequel to one delivered at the same place in February, 1847. This first lecture appears also to have been published, but I have not been able to trace it. The author remarks: "Up to that time (1847) it was not unusual to hear the new art spoken of as a scientific curiosity, to be classed presently with the chromatrope, etc. Even men of science would allude to it disdainfully as 'ingenious,' or 'pretty,' but undeserving of serious attention."

Blanquart–Evrard, Chevalier of the Legion of Honor, was a French photographer of great eminence. He was among the first to "publish" photographs, and his prints have proved more permanent than the majority then executed. Mr. Thomas Sutton was a great admirer of Blanquart–Evrard, and for some time worked in a kind of partnership with him.

1864. "On the Intervention of Art in Photography." Translated from the French by Alfred Harral, with an introduction by Thomas Sutton, B.A. With two photographic illustrations from negatives by the author. Crown 8vo., 27 pp. Sampson Low. 1s. 6d.

The two prints are from negatives of a frieze, and—in a copy I recently examined—are still in good order. In the preface, Sutton says: "I felt sure his new method of doctoring and improving a negative was a valuable discovery. To intensify you have simply to expose back of the negative to light after washing off the developer, but before fixing. In an hour or two it becomes much denser. Now wet and fix. To reduce, expose to vapor of iodine, convert into iodide of silver, and dissolve this out with hypo."

(*To be continued.*)

[*From Manuel de Photographie et de Collographie.*]

PHOTOGRAPHY UPON WOOD FOR WOOD-CUTS.

BY V. ROUX.

(*Continued.*)

Exposure in the camera.—The time of exposure of the sensitive plate varies according to the nature of the object. By making some tests the operator will easily recognize which is correct. A short exposure is generally to be recommended, thus obtaining positives with strong and clear high lights and some finely modulated whites.

The developing.—This is done in the dark room with the following solution:

Sulphate of iron	40 grams.
Acetic acid	30 c.c.
Alcohol, 34 degrees	30 "
Sulphuric acid	5 "
Water	1 liter.

The solution must be exactly according to formula, being particularly careful about the quantity of the sulphuric acid, as this is required to obtain brilliant pictures of a metallic luster. The developing is continued until all details are visible. If the plate has been over-exposed, the quick action of the developer is interrupted by a careful and thorough washing of the plate. When the coating has lost its greasy appearance the washing is discontinued and the picture is then fixed.

Fixing bath.—Pour over the negative a solution of

Cyanide of potassium	30 grams.
Water	1 liter.

as soon as the yellow iodide of silver not acted upon by the light has dissolved, which takes place after a few seconds, the plate is thoroughly washed.

Stripping of the film.—The plates are now placed in a solution of

Sulphuric acid	100 grams.
Water	1 liter.

and left in the same until the collodion film can be stripped easily from the glass. When done, wash thoroughly, after which the collodion positive can be transferred to the wooden block.

Preparation of the block and transfer of the film.—The wood for the cut can be obtained in the market, ordinarily provided with a white ground. This may remain when positive films are to be transferred which were obtained in the camera by way of the diapositive process, or by contact in the printing frame; but if a direct collodion positive is to be transferred, then the white ground has to be removed, and must be replaced by a fine black ground, consisting of bourgeois black to which is added a little gum arabic. This ground is dried and smoothed (polished) simultaneously, rubbing at once in opposite directions several times with the palm of the hand or a fine piece of cloth.

The transferring is done in the following manner: The negative ambrotype is placed, still wet, upon a table; a sheet of strong paper is drawn through a dish filled with water; the same is laid upon the collodion film, avoiding air bubbles, and is pressed lightly with the hand or a wooden roller. When the paper adheres, the negative film is lifted at one corner, the paper with the adhering film is taken between thumb and forefinger and stripped slowly from the glass. If the latter was entirely clean, the negative film will stick close to the paper in the course of the operation. After the film has been stripped, its surface is brushed over with a brush slightly moistened with gum water, placed upon the wooden block, and pressed on weakly. After drying, the necessary retouching can be done.

OUR ILLUSTRATION.

The subject of our illustration for this issue of the Bulletin is one of those scenes that lends such a charm to life away from large cities. Mr. Bradford was out with his family for a little picnic, and each having enjoyed a repast, the family horse "Norwood" was allowed to graze, led by the little three-year old son of our friend. The group was taken without any special arrangement for composition, and in strong sunlight. The picture is one of those quiet scenes that suggest the pleasure of rural life.

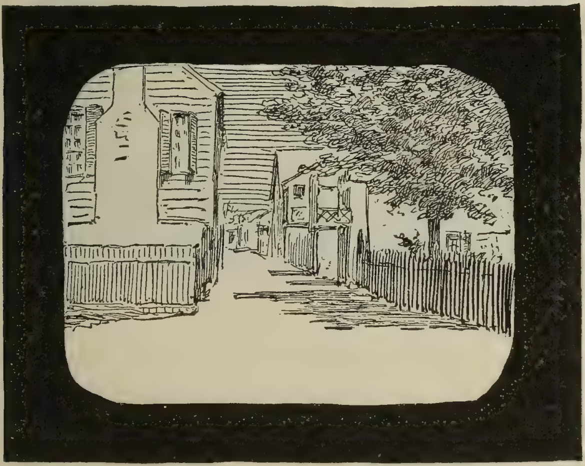
COMPOSITION IN PHOTOGRAPHIC PICTURES.

BY J. WELLS CHAMPNEY.

(*Continued.*)

[ANOTHER picture was then thrown on the screen of a street scene in St. Augustine, Fla., as below.]

Here is a somewhat puzzling picture. It is an architectural scene, and presents a strong contrast to the ones we have already had. For that scene I have prepared two mats. If one is to send that picture abroad to represent the variety of architecture, let it go as it is, but if one is to keep it for one's self because of any architectural interest in it, I would like to name the object of interest, and that is the view down the road. [Placing mat.] That is, to me, very pleasant and agreeable. There is no waste of space. I remember that old street which you see there with its Spanish balconies. I think we could sacrifice more, and so I am going to present to you this form as meeting still better the requirements of composition.



[The same view as altered is shown on next page.]

Now if you will compare it with the one shown before, you will see that we make our shape play an important part in the composition. We get, as you see, a little bit of white coming down on the frame. In one case the masses are white and the sky blue. If I were sketching that, that would be the selection I should make.

There is an interesting photograph of the boat Ticonderoga on Lake George. That line of the sky above and the water below will give you the idea that the vessel is on a flat surface.

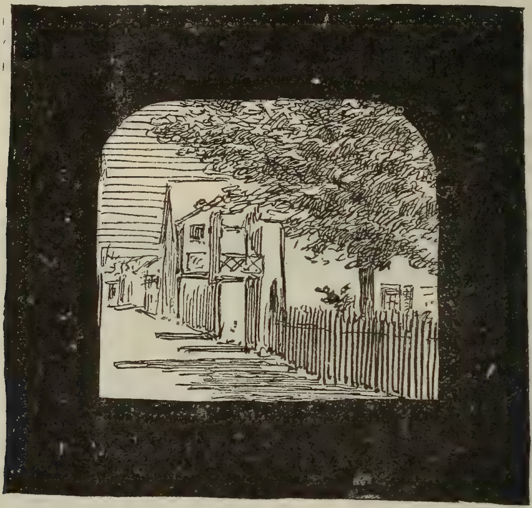
[Changing mat.]

Now, as the picture of a steamer it seems to me it serves the purpose better than when you are bothered by your interest in these waves. In every way it seems to me to be an admirable composition. The man who took it evidently knew when he had a good thing.

The sky as it is, is suggestive of the floating masses of vapor, and the steamer coming up against the same forms a very charming picture.

I think the object in making that picture was not to call attention to the clouds. The picture is one of a steamer in motion, and the sense of movement and progress and resistance against force is admirably given, and the balancing of the smoke-stack and the piston-rods and component parts of the structure of the steamer is very admirable.

[Several landscape views, which illustrated the principles of good selection, were thrown upon the screen and commented upon. Amongst others a landscape with road.]



How charming appears the outline of the trees against the sky; how the winding road carries the eye into the picture; and how admirably the architectural forms on either side balance one another. Whenever two elements in a scene conflict, one must be sacrificed if possible.

[A river scene followed.]

There is a little too much sky, otherwise it would be charming. As much as one-third of the picture can be cut off.

[A picture of a palm tree was then thrown on the screen.]

Now there is a case where a large amount of white is not unpleasant, because any of you who have been in the South know that that meaningless area of sky is one of the memories of the trip. Those cloudless days which you see in the South are very truthfully represented by that sky. There is no contrast in the light and shade. In all these cases the conventional mat serves our purpose. I think these are all very good pictures, but of course changing them with these mats in some cases, in my opinion enhances their beauty. I think our English friends ought to be pleased with what America has to offer them.

NOTE.—The diagrams which are used in this report to illustrate the principle at issue, do not convey any idea of the beauty of the lantern slides, and may thus fail of their purpose to explain the reasons for certain changes which were apparent to those who saw the original views with the changes produced by the alteration in form of the mats. But five have been made, as these were considered enough to call attention to the subject.

SILVER PRINTING ON ALBUMENIZED PAPER.

BY ELLERSLIE WALLACE.

(*Continued.*)

All that can be said about fuming can be summed up when we say that the paper should be absolutely dry (heat being used if required) before being subjected to the ammonia, and that the latter should always be as strong as possible. Ten minutes in strong ammonia ought to be enough.

It would perhaps be difficult to answer the question why so much stress has always been laid upon the formula by which the toning bath is made, and it is easy to see how a beginner, taking up the literature of the subject, is involved in great perplexity among the numerous receipts given. The amount of free silver left in the print after the preliminary wash, will have a direct influence upon the whole process of toning. The theory was laid down by Hardwich, that no print containing free silver could be successfully toned in alkaline chloride of gold; but it is doubtful whether this is strictly true. When we consider that nitrate of silver has not only a peculiar affinity for gelatine and albumen, and is removed with difficulty from either of these organic substances, it is questionable whether prints supposed to be washed free from silver are so in reality. To get rid of the last traces we should probably have to soak the print for a long time in a solution of some chloride or other haloid, and it would then be found that the pale brick-red color so obtained would not tone up to the brilliant, vigorous black or purple. The treatment by the lime bath would seem to help us in sustaining this theory, for excellent results are to be had by simply immersing the print in the toning solution without any preliminary washing whatever. The free chlorine in the lime bath immediately acts on the free silver to a greater or less extent, after which the toning proceeds uniformly even, in spite of the heavy deposit of chloride of silver that forms on the face of the print. To the question, "How much shall the print be washed?" I do not believe that a positive answer can be given. Presupposing good water supply and ample room in the tanks (a most important thing), it might be said that from ten or fifteen to twenty-five minutes would be about right; the prints, of course, not being allowed to stick together in masses. I have seen excellent results obtained by merely soaking the prints a few moments in water which was changed once, and followed by a wash of one ounce of No. 8 acetic acid to every gallon of water; after they had slightly reddened, the acid was poured off, and the dish filled up again with plain water. The toning bath was gold with acetate of soda, kept for about twenty-four hours before using.

In the ordinary alkaline toning bath, the presence of too much free silver in the prints will manifest itself by unequal action on the print, mealiness, and diagonal red lines. It is a safeguard to have a saturated solution of common salt close at hand, so that a little may be added to the bath if the washing has been insufficient. In such cases the bath will generally be cloudy from chloride of silver after the prints have been toned. An important practical point is that there should be white light enough to enable the change of color to be distinctly seen. Subdued daylight is best, but gas at night may also be used. I have always judged of the tone by reflected light, *i. e.*, by the face of the print, not by looking through the print, as some very successful operators are in the habit of doing. The prints must be well rinsed after toning, and of course it is necessary not to expose them to light more than is absolutely required.

I was much surprised a short time since to learn that it was a common practice not to throw away the hypo fixing bath, but to keep it over from day to day. I mention this only to condemn it; for, although fine results may be made, the tones are probably due to a sulphureting action fatal to the permanence of the print, as well as the risk of imperfect fixation, owing to the bath becoming weaker by use, and losing its solvent properties. I would urge not only that the solution be strong, but that a liberal quantity be made up fresh for each day's use, and that the prints be kept constantly moving, so as to insure thorough action. If economy must be rigidly observed, it would be better to let the bath after use simply stand in the dish until strengthened enough by evaporation to fix negatives. Commercial hyposulphite of soda I have never seen show an acid reaction.

The same general ideas as regards washing of prints before toning, might hold good in the washing after fixation. That is to say, I believe that too much stress has been laid upon prolonged washing. Rapid change of water, and constant moving of the prints, with every now and then draining off the water completely, ought to finish the process in from two to five hours, according to circumstances. The best safeguards against blisters are to see that the paper is not too dry before silvering, and to pass the prints from the hypo into a strong solution of common salt. The dish containing them may be set under the tap, and the solution slowly diluted by allowing a small stream to flow in, the washing being afterwards carried out as usual.

Let me now roughly outline a routine of printing which I have myself followed successfully. The room used for the purpose should have a southern exposure. The paper, of course, may be floated anywhere, and the silver bath may be 50 grains to the ounce. My favorite formula contains half an ounce of aqua ammonia to every quart of solution, the brown oxide of silver being taken up again with a few drops of strong solution of nitrate of ammonia. This leaves the bath strongly alkaline, and enough nitric acid should then be added to nearly, but not quite, neutralize it. If a few drops of saturated solution of alum and about ten per cent. of alcohol be added, they will increase the coagulating power of the bath. The paper may be floated the night before in cool weather, and if anything occurs to prevent it from being used on the following day, it should be laid under pressure between sheets of white blotting-paper, previously soaked in a saturated solution of bicarbonate of soda and dried. The paper thus protected will keep good for many days, and I believe would give results superior to the ready sensitized paper now so much in vogue. Fuming should not be done until just before printing. The negatives may be sorted over, placing the strong ones and the weak ones together, and having tissue paper, cut to the proper size, ready to paste on the frames, as before alluded to. The various dodges for double printing need not detain us here; but if it be attempted, skill and care will be required. A sufficient quantity of chloride of gold solution, one grain to the dram of water (stock solution), is measured out, allowing say one grain to the sheet. This is carefully neutralized, either with bicarbonate of soda or borax, and allowed to stand while the prints are passed through several changes of water. I have generally used the toning bath at the strength of 1 grain to 5 ounces of water, taking care to have the solution lukewarm in winter weather. The bath when ready should be nearly free from the yellow color of the gold. If the prints tone unevenly, add a pinch of common salt to every 10 ounces of bath. The fixing bath may contain an ounce of hypo to 6 of water in summer, or 4 in winter, and should be made up in warm water, to compensate for the refrigeration caused by the dissolving of the hypo. The prints may be left in from 10 to 15 minutes.

I would again insist upon having the dishes and washing tanks large enough to accommodate the prints with ease. The paper should be silvered in whole sheets, and very effective dishes for the purpose may be made of wood, protected by paraffine, a hot iron being used to melt it and drive it well into the pores of the wood. Washing tanks might be made in the same way, but porcelain only should be used for toning and fixing. If the water be full of finely divided mud, it will be necessary to drain the prints well after removal from the wash water, and dabble them about in a gallon or two of well filtered water, such, in fact, as is used at table.

ART IN PHOTOGRAPHY.

BY ELBRIDGE KINGSLEY.

(*Continued.*)

I HAVE observed that the more mechanical or scientific the mind of the operator, the more there is a piling up of form and detail in a given space, and consequently the more flat and map-like the picture. There is a call for a wide-angle lens to sweep the whole horizon, and a long-focus lens to bring a distant mountain near. A morning mist, or a distant smoke curling upward, is an apology. A clear sky and a noonday sun are required, and then all creation can be carried home in the coat pocket. There can be no objection to such research for facts, but Nature and the camera are not at fault if the result is hard and uninteresting as a picture. It is in effect trying to furnish a house before the house is built.

I have to confess myself to having relegated the camera to a subordinate position, and of late scarcely using it at all. Still I have had experience enough to see delightful possibilities in the making of finished pictures by photography. For instance, the study of light is a field of infinite range. To know the exposure necessary under all conditions of sky and atmosphere is an art of itself. And in spite of difficulties a golden sunset *can* be suggested in a photograph, and in contrast the sharper light of the rising morn.

I am glad to know that there are men who are producing wonderful results by using mediums before the lens, and by using plates especially adapted to bringing the whole picture up at once. It is the principle of bringing a whole army to fight the battle, instead of sending up parts to be beaten in detail. The sticking of different negatives together is a part of the detail policy. It is like shooting a rabbit by relays of sportsmen. The bullet is passed along the lines and the last man brings down the rabbit—if he has not gone away.

Composition and the selection of masses of light and shade can be *thought* of with the camera as well as with brush and pencil. Simplicity in form, also, can be managed by choosing what shall be most prominent, focusing upon it, and losing in distance the subordinate or unimportant.

There is one law of the human mind that it is well here to consider. The mind can take into consideration but one idea at a time. The eye cannot take a distinct impression of more than one thing at a time. And why should we try to make a picture on any other principle? Why should we strain after the perfection of a camera, that can focus the whole horizon, and twenty miles in depth, when the painter tries to make his picture on just an opposite plan? that is, the leaving out of all that is not necessary to convey to the mind the character of the scene attempted, or just what the mind and eye naturally takes in by simply looking.

It is not necessary that one should be a skillful painter, although it would be an advantage to the artistic photographer. I know of no law compelling a man to go to sea in somebody else's costly yacht, provided he has a good staunch raft of his own, and especially as the raft *may* reach the same haven at last. The voyage in the humbler craft may have some advantages. For instance plenty of fresh air, and ease of washing the floors in a rough rea.

I see no objections to the photographer manipulating *his* plate in harmony with pictorial laws, just as any artist would in black and white, or a painter with his colors on the canvas.

Or, he can use his direct work from Nature in parts and put together afterward by drawing—then making a new negative. I do not mean by this that he can get values that are absolutely non-actinic, or that he should fasten a sky to a ground taken at a different time. But, by adapting the exposure to suit the different values at the moment he certainly gets memoranda valuable to put together as a whole, or, on the same principle, the operator can *reduce* the landscape to a monotone before it reaches the plate, and make the exposure of the whole come to the needs of the slowest part of the picture.

It is wonderful, with study and the looking for it, how the eye becomes trained in the detecting of subtle differences of shade in the planes of a picture. And, also, how satisfied the mind becomes with just the detail that will mark and emphasize these planes. You don't need a thousand trees just to say tree, nor a million rocks just to say rock. Pile these things up in your storehouse as facts, to use *only* in moderation.

One or two personal experiences may prove interesting and amusing. I remember very well the first dozen plates attempted. They looked as if they had been through a water bath, a milk bath, and a sand bath all at once. A bit of tree showed here and there, and perhaps a steeple or a chimney straggled against the sky. I never knew what was the matter with those plates, but I wonder that the glass ever stood it.

Many a time has a beautiful phase of Nature been before me, while the camera behaved like a balky horse, and I would fain have thrown the whole apparatus in the river.

A tantalizing incident occurred once upon Mt. Holyoke. It was a very hot day. The rocks before me were jagged and precipitous. Still the views from the cliffs above were delightful, and the glimpses of the Connecticut River through the trees were stimulating in the extreme. So doffing coat and vest, and hanging camera on a stick over the shoulder, the painful ascent was commenced. The foothold was precarious on account of a slide of loose rocks underneath, yet by laying hold of bushes, and a careful placing of the feet, the ascent was at last nearly accomplished.

A sudden elation seizes the mind. One more pull, and we have all before us.

Turning to look, the stick over the shoulder strikes a bush, a limb gently lifts off the camera, and with its sides crashing in like an egg-shell it goes tumbling down the mountain.

Aghast, I watched it skip from rock to rock, and fall a hapless ruin at the starting point of my journey.

The view was all there, but where was the wherewithal to reproduce it.

Enough has been said, I trust, to strip our subject of any illusion that there is a royal road to beautiful results. It may be disappointing to realize that when splendidly equipped we are powerless in just the field we expected to conquer. It seems such a trivial affair to pull off a brass cap, say "one! two!" and have the picture all there. Yet it is only the beginning of a study: as slow and painful as the work of the artist with his canvas and brushes. And why should you expect it to be otherwise. The artist is humiliated at every step, and made to feel his littleness, and with time becomes a veteran in the art of making the most of the important things in a given time.

Why should not the photographer in the same spirit commence the study of the subject he is after. Nature is an open book to all, and can give sustenance to any taste or inclination. Why accept the conventional saying: "It is only a photograph." Is not the result just about what the operator sees himself and is satisfied with, and what the public *thinks* is perfection? Why this dead wall in front, a *conventionality* which says *what* a photograph shall be. Who is to say that this flat silhouette of a million twigs and leaves against a white sky is *all* that Nature had to show, or *all* that the worker could have secured.

What do you know of a glorious sunrise if you commence at ten in the morning. What of a golden sunset if you don't care for it and never tried it. What do you know of the beautiful possibilities in woodland foliage on gray rainy days if you never attempted such study. And so in the thousand and one rare phases of Nature, the best are the most difficult to reach. You must learn to see and love them first, just as does an artist, and when you do, you *are* an artist.

Then it does not matter if the artist takes along the camera as a servant, or if the photographer takes out the canvas and brushes. It is merely a matter of convenience.

(*To be continued.*)

ORTHOCHROMATIC PHOTOGRAPHY.

New York, February 15, 1887.

To the Editors of the Bulletin.

My attention has been called to the communication of Dr. Vogel in your issue of February 12th of the Bulletin. Disregarding the personal attack upon myself in that communication, I merely ask for space enough in your columns to correct the typographical error which Dr. Vogel makes the excuse for criticising me. The typographical error which Dr. Vogel regards as so important, and which he asserts proves the writer to be "some one who does not understand much about it" (orthochromatic photography), is the phrase "for the depression of red" instead of the "increased action in red." From that which immediately preceded and followed this clause in the article referred to, it is seen to be merely a printer's blunder "in setting up," and therefore leads to no misunderstanding of the sense.

Chas. Ehrmann.

DALLMEYER'S RAPID LANDSCAPE LENS WITH LONG FOCUS.

The following letter, which we take from the columns of the *British Journal of Photography*, explains the character and use of this latest addition to the optical resources of the photographer.

To the Editors.

Gentlemen,—My object in introducing to your notice this morning the lens 2 R. P. (Rectilinear Portrait), constructed by my late father in 1878, is that you, in justice to him, would point out that the Voigtlander lens referred to in your last issue of the *British Journal of Photography* is not a novelty in point of construction, and moreover, that its claims fall short of the lens you see to-day.

It was exhibited to the jury at the Paris Exhibition of 1878, from whom it received special mark and commendation. In points of similarity to the Voigtlander it consists of two symmetrical combinations of the "Rapid Rectilinear" type, and is aplanatic. Working with full aperture 2.75 inches, it has an equivalent focus of 9-25 inches, or intensity $\frac{1}{32}$ (Standard of P. S. .64). The angle of the circle of illumination included is 41 degrees, or the lens covers a circle of seven inches, which will include a 5 x 4 plate.

The extreme fineness of definition, flatness of field, and depth of focus are most pronounced, and it has the advantage over the "Petzal" and "Patent Portrait" forms of portrait lenses in that the image given is more brilliant (through less reflecting or open surface) and it is rectilinear.

The great strain on my powers of producing lenses ordinarily known by catalogue has prevented me from bringing this form of lens prominently forward hitherto, but as a lens of this form appears to be in demand, I have now thought fit to introduce it.

No one knows better than you that at the meeting of the Photographic Society of Great Britain (at that time the London Photographic Society), held on January 11, 1870, my father submitted for examination three lenses, all of similar type, with cemented backs, the diameter being alike in all, but the ratios of aperture to focus different, these being respectively *f*-15, *f*-8, and *f*-4. This establishes the fact that the production of a rectilinear portrait lens was at the date mentioned *un fait accompli.*

The 18-inch landscape lens that I have submitted to you was constructed in 1880, and one or two were supplied by a special desire. The lens is constructed for taking distant land and sea-scapes, etc. The one now submitted is made for plates 12 x 10. Its intensity is *f*-12 (Standard 9), with full aperture, and I do not believe that any single combination has hitherto been constructed with this rapidity of equal covering power.

You will readily understand that it is constructed for a special purpose, and I have now being made the whole series from 6 x 5 upwards, for of late I have been frequently asked for such a lens, "a lens including less angle, but giving a larger image of distant objects!" This lens includes an angle of 40 degrees on the plate for which it is constructed, with twice the rapidity of the wide-angle landscape lens. I am, yours, etc.,

10 Bloomsbury Street, London. Thomas R. Dallmeyer.

[The two lenses which accompanied this letter were respectively that which secured for the maker the French honorable recognition referred to, and a simple achromatic combination of eighteen inches focus, the largest stop being one and a half inches. Lenses of long focus are very useful, especially for distant objects; for, as we have long ago shown in these pages, when the focus exceeds fifteen inches, approximately, the objects in the photograph are telescopic, that is, they are depicted on a larger scale, when held the normal distance from the observer's eye, than that on which they are seen in nature by unassisted vision. We have a perfect recollection of the exhibition of the lenses at the Photographic Society in 1870.—Eds.]

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E. & H. T. ANTHONY & CO., Publishers.

[*From the Washington Star.*]

PHOTOGRAPHIC PASTIMES.

(*Continued.*)

AMATEURS AND PROFESSIONALS.

"DOES the work of amateurs equal that of professionals?" asked the reporter.

"No, I don't think it does," was the reply. "The kinds of work differ materially, and it is, perhaps, unfair to compare them. The professional photographer devotes himself mainly to indoor work, and has to make a careful study of light and shadow. Of course he is limited to a few conventional backgrounds, and there he is handicapped, but the treatment of the light which comes through his sky-light is his study, and he manages it so cleverly that the result is clear, smooth pictures. The amateur, under like conditions, wouldn't notice a little light or shadow which would ruin his picture as a likeness. Now, I took a photograph of a little girl yesterday. I thought the light was very favorable, but when I developed the plate one cheek looked as if a bad case of toothache had made a balloon of it. A little dash of light that I hadn't noticed was the cause. Nature is the amateur's field, and his success, and perhaps apparent superiority over the professional, lies in the fact that for pleasure he hunts out picturesque or odd views that the professional has not the time nor inclination to find, and secures combinations that the professional is not able to secure.

AMATEUR VIEWS.

"To illustrate," continued the amateur, "here is a photograph that a professional couldn't and wouldn't take." It was a view taken at Soldiers' Home. Two little children, a boy and a girl, were calmly seated on one of the big cannon in the grounds. The bright light was softened by surrounding foliage, and one of the Home buildings formed the background.

"Now it wouldn't pay a professional to spend half a day hunting a view like this," handing the reporter another photograph. The subject was one of the typical negro cabins which used to be so plentiful in the neighborhood of the city, but which are rapidly disappearing. The old colored man and his "auntie" with a raft of pickaninnies were artistically grouped in front of the tumble-down shanty.

"Is the pbotograph fever spreading?" asked the reporter.

"Oh! yes, quite rapidly," was the reply, "although there is no photographers' club here as there is in New York and elsewhere, and the photographers are not generally known to one another. In New York, the club chartered a vessel at the time of the big yacht race last summer, and there were two hundred and forty cameras on board. That was only a portion of the number, though, that were aimed at the yachts that day.

FOLKS WHO HAVE CAMERAS.

"I know, however," he continued, "that there are a great many people in Washington who find much pleasure with their cameras. Senator Kenna is one of the most enthusiastic photographers I know of. He carries a detective camera, so called. It looks like a strong satchel filled with bills, reports, etc. He often has it with him during the day, and shoots it off whenever he sees something he fancies. His pleasure is all over, though, as soon as he has developed his plates. A. A. Adee, Assistant Secretary of State, is another enthusiast, and he takes good pictures, too. Clifford Richardson, of the Agricultural Department, takes many pictures for pleasure, although he does a good deal of work for the department. Max Hansmann, of the Lighthouse Board, has been very successful with his camera. He is a bicycler, and carries his camera all about the country into odd nooks with him. With a brother bicycler he rode to the Natural Bridge summer before last on a sociable and took a series of beautiful views, which were framed all in one frame and presented to the Capital Bicycle Club. The pictures were much admired at the house-warming at the new clubhouse recently. The Capital Club made an excursion to Hagerstown last Fourth of July. The boys had to return in the night, and their car was side-tracked at Weverton to wait for the express. Early in the morning Hansmann went through the car with his camera and caught a number of the boys sleeping in all kinds of postures and with their mouths open and twisted. You could almost see the snores. P. T. Dodge, the patent attorney, takes good photographs when he finds time. He travels about the country a good deal, and sometimes takes his camera with him. Edgar Richards, nephew of Bancroft Davis, is an enthusiast. F. H. Noyes, who is now studying music abroad, has his camera with him, and is doubtless taking some picturesque views on the Continent when he finds time. There are lots of other enthusiastic photographers here. I can recall Samuel Phillips, O. D. LaDow, Private Secretary to the Commissioner of Agriculture; Professor Alexander Graham Bell; Charles J. Bell, the banker; Dr. Leonard, the Rector of St. John's Church; Professor DeSmedt, the District Chemist; Al. F. Childs; Professor French, of the Agricultural Department; William H. Holmes, the artist; Colonel Clay, Chief Clerk of the Department of Justice, who recently took a series of interesting views in northern Canada; Mr. Spinner, the artist; Robert Hinckley, artist; D. E. McComb, of the District Engineer's office; Levi Woodbury, of the St. James Hotel; Arthur W. Harrison, of the Patent Office; R. D. O. Smith, the Patent Attorney; Paul Draper; Dr. T. M. Bradley; W. L. Crounse, the newspaper correspondent; Louis Wells; J. A. Snyder, the brass-founder; Camill Fauth and Mr. Fisher, the mathematical instrument makers; Herman Hollerith, the Patent Attorney; Dr. Howland, the dentist; Philip Clarke; Benjamin Ames; Dr. C. A. Crampton; F. E. Lupp, of the *Star;* H. L. West, of the *Post;* A. E. Knorr; Malcolm Cudlip; Charles A. Gray, correspondent of the St. Paul *Pioneer Press;* George A. Howe, son of Dr. Frank T. Howe; Victor Kauffmann and Frederick R. Parks. Among the ladies who photograph are Mrs. Alexander Graham Bell; Miss Nordhoff, daughter of the journalist; Mrs. Leonard, wife of the minister; Mrs. Fisher, wife of the mechanical instrument maker; Miss Sampson, Miss Coyle and Miss Hill, of West Washington. Those I have mentioned are not all of the amateur photographers here. There are doubtless many more who do good work that I never knew of. A good many young men throughout the departments are quite successful, and

THE PHOTOGRAPHING FEVER

has struck the navy hard. A few young naval officers on their trips abroad have shown the Navy Department what good work they can do with their cameras, and now it is the intention to provide all the naval vessels with photographing outfits, and a number of young officers are being carefully instructed. That is a very good idea. Photographs of places and things will be a great aid in making official reports to the Navy Department. The fever has reached the ladies also, and they seem to enjoy the sport very much. I have frequently seen young ladies while out driving stop their horses long enough to take a photograph of some view that caught their fancy. Mrs. Bell, the wife of Professor A. Graham Bell, is one of the most prominent lady photographers here and she is quite an expert. Photographing and bicycling seem to go well together, and a number of wheelmen are proficient camera manipulators. Their views are always attractive, for they generally have their wheels or groups of wheelmen in the foreground, making a very pretty feature of the picture. Get a camera yourself and see how you like it. Perhaps you can photograph an item occasionally," concluded the reporter's photographing friend.

EXHIBITION OF LANTERN SLIDES BY AMATEUR PHOTOGRAPHERS OF CINCINNATI.

THE ex-Cincinnati Camera Club, now the Photographic Section of the Society of Natural History, which is rapidly acquiring fame through the country, gave, on January 19th, their fourth annual exhibition of lantern slides at the Odeon, before a brilliant audience of about fifteen hundred people, mostly friends of the members of the club, and generally interested, through artistic pursuits or attainments, in their progress.

One of the rules of these exhibitions has been that all slides must be the work of the club and not previously shown to the public. This requirement calls for new subjects, and permits a close observation of the improvement of the club from year to year.

The pictures were projected on a screen about twenty-four feet square by means of two superposed lanterns, supplied with oxy-hydrogen light.

Out of a membership of fifty-two, twenty-one members contributed about two hundred slides, from which one hundred and twenty-five were shown.

A number of the amateurs being tourists, the geographical variety was quite extensive, and while covering most of the United States, also included glimpses of the old world. By a judicious arrangement on the part of the Exhibition Committee, the slides were divided into different classes.

Examining the various subjects in the order in which they were shown, the introductory picture, by Mr. E. J. Carpenter, is a study in clouds with a silhouette of landscape, reminding us that though lifted in our imagination into vaporous regions, we are still in sight of *terra firma.* While these clouds seem to dissolve and vanish, through them we observe, faintly at first, what finally proves to be the entrance to the grounds of Dr. McCosh, President of Princeton College, New Jersey, by Mr. George McLaughlin. Figuratively speaking, we cross the threshold and a series of subjects pertaining to the class of architecture is disclosed to our view. In this class are entered seven slides. We find old and modern architecture, humble and palatial mansions; the home of the Italian, the Teuton, the negro on his southern plantation, the Indian on his prairie, etc. In this collection the one offered by Mr. Dwight Huntington is perhaps the most meritorious. It portrays two dwellings, one a substantial log-house built for Lo, the poor Indian, by the Government, and the other a modest tent erected by our Indian for his own use, and more to his nomadic instinct.

Passing rapidly from one class to the next, two interiors are offered, both good, one particularly so, by Dr. Hunter, technically perfect. It is a view of the "Literary Club Room." The illumination is nearly at right angles with the general line of vision, every object in the room having its high lights well balanced by corresponding shadows, conveying a degree of perspective quite remarkable. The negative was made on the morning following the meeting night of the Literary Club, and the display of bottles and glassware would seem to show a close acquaintance between Bacchus and our *litterateurs.*

Passing by street scenes, none of which deserve any particular notice, roadways naturally follow, and out of six entries, one taken by Mr. George W. Bullock, in Berkshire, New England, is certainly exquisite, not on account of its technical merits alone, but specially in the selection and treatment of the subject.

Among the fruit and foliage display, Mr. E. B. Johnston presents a begonia in its earthen vase, the corrugation of the leaves being very delicately brought out, and the plant standing out in bold relief against a neutral background.

Twenty landscapes are presented, all good, but generally indifferent in interest. Three, however, are characteristic. Mr. Farney presents a view of White Stone Cañon, in the Rockies, on the Missouri River. Two skiffs in the foreground, but not obtrusive, are laden with tourists, cameras, guns, etc. A fine turn in the river, inclosed by the Rocky Mountains, presents a vivid effect.

A farm, near Salisbury, England, by Mr. Nichols, is typical—hedge fences, luxurious trees, and buildings in keeping with farm life, present a pleasing picture to the eye.

Mr. Bullock offered a snow scene, near Williamstown, Massachusetts, the snowy landscape being very much enhanced by a sky covered with clouds, through which may be seen, at intervals, bits of clear sky, the gradation of the clouds offering a fine study.

Roaming for a few minutes among waterfalls, of which the number entered is too small, Dr. Hunter is happy in his treatment of Niagara Falls taken from the Canadian side, with the suspension bridge in the distance. The details in the water are very clear, and a contrasting effect of perspective and foreground make this the gem of waterfalls.

In the classification of boats, only four entries are made, Mr. E. J. Carpenter leading the series in his instantaneous view of an Ohio River tow-boat going at full speed. The view is one of life and movement; the water beaten by the wheel is carried upwards and divided into a thousand sprays caught in mid-air.

The surf pictures are few, owing presumably to the lack of opportunities offered to the Western amateur. Dr. Hunter, however, does himself honor by catching a high swell just breaking towards the beach; schooners and sail-boats in the distance break the evenness of the sea.

After an intermission of ten minutes the exhibition is resumed.

Again Mr. E. J. Carpenter opens with a colored cloud study, the tinting adding great brilliancy to the picture, the blue sky bringing forth the transparency of the clouds. It was warmly applauded.

Prize pictures, by Mr. E. B. Johnston, next appear before us. Mr. Johnston's production is a bold one, the interest centering on an erect figure on the first plane of the landscape having the Miami River and distance for a background. The first plane is a picture of itself, and the addition of the river and distance gives it a strong and effective transition. The value of a figure, even in the most prominent position, is very forcibly illustrated in this case.

Only one entry in statuary is made. Mr. Bullock giving us a perfect image of the Bartholdi Statue.

A workman hanging by a rope conveys the comparative size of that colossus.

Under the class of "Still Life," we admire an anonymous contribution, a copy of a painting after Hartnett's. "The Violin."

Seven slides are entered in the class of "Animals," "A Pair of Jerseys," by Mr. Kelley, being admirable, both animals watching the operator as though understanding his object. Their pose and expression would form quite a study even for Rosa Bonheur.

Among eight slides devoted to portraits and groups, two are particularly good. One representing an "Old Mountaineer," by Mr. A. D. Smith; the face is expressionless and certainly characteristic of very old age. Mr. Kelley's "Three Little Kids from School" presents a refreshing contrast.

A Soldiers' Parade in Dakota, by Mr. Huntington, speaks better for the artist than for the soldiers.

In the group of instantaneous views not otherwise classified, Mr. A. D. Smith's: "Mt. Auburn Earthquake," showing an explosion of an entire hill, is very realistic.

Dr. Le Boutillier offers probably the most remarkable instantaneous work with the detective camera. A view of "Silver-Cloud" winning the Hindoo stakes at Latonia, Ky., in 1886, shows the advantage of the detective camera over others where a picture is desired of a moving object. The doctor explains that in taking running horses he follows them with his camera until they reach the desired point, when the exposure is made. Thus, examining the horse "Silver Cloud," the head and body are perfectly sharp and show no signs of movement, the muscles and the eye even are perfectly delineated. The legs, though as well defined as could be expected, show a slight movement, as they have a comparatively double motion, which is however corrected to a certain extent by having the camera following the horse.

Mr. Dwight Huntington contributes character sketches of Indian life in Dakota, which are novel and instructive.

The next and most important class on the list is "Original Compositions." Without a single exception, all entries are worthy of description, but time and space are too brief. However a few should be described. "The Gossips," by Mr. Farny, are suggestive of a decidedly busy chat. Of the four women whose faces are not seen, one of them with spotted apron and arms akimbo, has a typical pose.

The "Two Penitents," and "Little Red Riding Hood," also show the originality of the same artist.

Mr. Fiedeldey is very clever in his representation of the manager of an excursion party making terms with the owner of a hotel at Mammoth Cave. "Curiosity," by Mr. Kelley, is much admired—a little one is caught investigating the contents of an ash barrel.

A composition showing an Indian grave, by Mr. Huntington, is styled "Indian De-composition."

"Cottage Door" is treated by Mr. Kelley, and the hero is a young one in very short clothes, crawling out on all fours through a cottage door.

"Expectation," by Dr. Le Boutillier, is represented by two dogs. A spaniel with his head in the ground, on the track of a mole, and a mastiff pup looking on with amazement and evidently wondering at the action of his *confrere*.

Some colored slides by Mr. E. J. Carpenter are well worthy of the applause they received. The one entitled "Seining for Bait," representing in the center three urchins seining for crawfish, is very successfully treated, the coloring giving to it a brilliant and characteristic effect.

The exhibition finally winds up with some Indian sketches by Mr. Huntington, the last one entitled "Evening on the Prairie," in which an Indian tent stands out in silhouette above the horizon, while the only light is that coming through the clouds overhanging the sky in a sinister manner. The idea conveyed is one of desolation soon to be entombed into silence and darkness by the fast approaching closing of the day.

Reviewing the exhibition in a general way, it was a meritorious diplay of lantern slides. Technically they compared favorably with slides exhibited by professionals, while the subjects were more original.

Perhaps the most interesting class of subjects was that of "compositions," original or otherwise. It is natural that it should be so, since a composition calls upon our artistic faculties for successful production. Characteristic and ideal subjects will generally be more appreciated. Landscapes, of which there must always be a large proportion, could be improved materially and become more interesting by the addition of clouds, natural or artificial.

As we are striving to improve as we go, perhaps no one will object to the suggestion—More clouds, more colored slides, more original composition.

L. M. PETITDIDIER.

CINCINNATI, January 28, 1887.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

SPECIAL MEETING, JANUARY 19, 1887.

IN response to a call for a special meeting, issued by the President, the Society assembled at No. 1604 Chestnut street, on the evening of January 19, 1887, by invitation of Mr. L. J. Marcy, to examine and test the efficiency of his new "electric focus lamp" for the optical lantern.

The meeting was called to order by *Vice-President* BURROUGHS, after which Mr. Marcy described the new lamp.

The light was produced by the "arc" system, with carbon electrodes arranged and controlled in a peculiar manner. The negative electrode was held in a fixed place by pressure and a stop. The positive carbon was arranged to slant forward and downward from above, in such a manner as to allow its point to fall a little behind the negative electrode, thus throwing the concavity of the light mostly to the front, and producing an almost perfectly even illumination of the screen, free from shadows of the carbon points.

The slant of the carbon rod kept it in circnit by its own weight on the plate through which it slides, and which also directs and steadies its descent. An adjustable spring balances the force of the differential magnets to suit the current used, and the length of the arc desired.

The base of the lamp, which also forms that of the lantern, is wide, so as to insure steadiness of the entire apparatus.

The brilliancy was such that the room was well illuminated by the light leaking from the various openings in the lantern, and the novel effect was experienced of a lantern exhibition in a room sufficiently light to enable all ordinary objects to be clearly seen, and persons recognized with perfect facility.

A large number of slides brought by members were projected on the screen, many of them being extremely dense. Slides of this character, which the lime light had failed to penetrate properly, were fully brought out by the electric light, and those of ordinary density were reproduced with great brilliancy and perfection of detail.

The tremulous, undulatory variations common to the arc light, seemed to be entirely overcome by the apparatus, so that in steadiness, as well as brilliancy, the lime light was excelled.

The interesting and successful exhibition of the apparatus afforded great gratification to the members present, which was expressed by a vote of thanks to Mr. Marcy for his courtesy, after which the meeting adjourned.

ROBERT S. REDFIELD,
Secretary.

MINUTES OF THE STATED MEETING, HELD FEBRUARY 2, 1887.

President FREDERIC GRAFF in the chair.

The resignations of C. L. Harrison and G. Walter Bates were read and accepted.

An invitation was read from the New Orleans Camera Club to their first exhibit and sciopticon display, February 8, 1887.

The Executive Committee presented their annual report, showing for the year a net gain of nine, and a total of one hundred and forty members.

The report of the Lantern Exhibition Committee was accepted, and the committee discharged.

The Committee on Membership reported the election as active members of William B. Rogers and Thomas A. Lane.

Mr. ELLIS moved that the members of the society be permitted to give exhibitions of their own in the room of the society, at such times, and under such regulations, as the Executive Committee may deem proper, the room being open during such exhibitions to all the members.

The subject was referred to the Executive Committee for consideration.

The paper for the evening was read by Mr. WILLIAM BELL, upon the preparation of gelatino-bromide emulsion, coating the plates, and drying the same in connection with his newly designed drying box and closet. Mr. Bell read the process of Professor Newbury for the preparation of gelatine dry plates, and explained the manner in which, he considered, improvement could be made upon his methods. He then demonstrated the use of his cabinet, which consisted of a case, covering a floor space of only 30 x 20 inches, and about 4 feet high. It is inclosed by tight-fitting doors. Racks sufficient to hold 204 5 x 7 plates are arranged one upon the other, and hold the plates securely and apart in saw-teeth notches. A current of air for drying is brought in from out of doors by means of a wooden trough, which is attached to the bottom and back of the cabinet, rises through the layer of plates, and passes out again at the top through a chimney connected with the dark lantern, which stands upon one side of the top of the cabinet, a free circulation being maintained by the heated air from the lamp. Upon top and to the left of the cabinet stands a case about 18 inches square, in which is an ice chamber for cooling and setting the emulsion; the plates are laid upon a series of four glass shelves, each shelf being leveled by an ingenious arrangement from the outside. A plate, on being coated, is placed upon the upper shelf, others following; by the time the lower shelf is reached (some three or four minutes) those first inserted are well set and ready to be placed in the drying closet beneath; an iron tank for ice, in warm weather, is at the base of the closet, and to insure freedom from dust, the current of air may be required to pass through gauze, saturated with glycerine.

A vote of thanks was tendered Mr. Bell for his kindness in bringing the appliance before the meeting.

Mr. WOOD exhibited the handsome bronze medal awarded him by the Photographic Society of Great Britain at their late exhibition.

Mr. CARBUTT showed thirty lantern slides from negatives made by him of buildings on the streets of Chicago previous to the great fire. The slides were made upon gelatine plates, and were remarkable for their clearness and fine tone.

Mr. Carbutt called attention to the use of citrate of ammonia in the developer for transparencies; he thought it gave a rich tone, and kept the shadows clear. Mr. Carbutt alluded to a foggy deposit which at times appears upon old lantern slides between the film and glass cover; he suggested that it might be a fungoid growth upon the gelatine, and stated that it can be prevented or removed by flowing the plate with a collodion, 4 grains of cotton to the ounce.

Mr. RAU stated that he had observed the same foggy appearance in wet slides, and upon separating the glasses, found the deposit to be upon the cover, which was readily cleaned again.

Mr. S. SARTAIN announced that by special arrangement made with the Directors of the American Exhibition in London, pictures which may be sent by members to the New York Exhibition can, at its close, be forwarded to London, and yet be admitted, although two weeks after the advertised date of closing for admissions.

Adjourned. JOHN G. BULLOCK,
Secretary pro tem.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, FEBRUARY 1, 1887.

President H. J. NEWTON in the chair.

The Secretary reported the receipt of the usual photo journals contributed monthly to the section, also a number of large photographs from Anthony's BULLETIN, part of the exhibit of F. Müller, of Munich, who won the gold medal for foreign portraits at St. Louis.

The Chairman of the Executive Committee then read the following report:

REPORT OF EXECUTIVE COMMITTEE.

Mr. President, Ladies and Gentlemen: The Executive Committee have the pleasure of announcing that at the next regular meeting of the section, Tuesday evening, March 1st, Dr. Maurice N. Miller, of the University of New York, will read a paper on "A Perfect Camera."

The subject will be illustrated with the stereopticon.

Also, if time permit, other attractive and instructive pictures selected from collections made by members and friends of the section.

All present, as well as their personal friends, are cordially invited.

For this evening, the Committee take great pleasure in announcing that Mr. Elbridge Kingsley, a gentleman well known to all the readers of the *Century* magazine by his illustrative work, has kindly consented to speak on the subject of "Art in Photography."

As Mr. Kingsley is an artist, engraver, and amateur photographer, and has gained some notoriety by his labors, the committee has no doubt he will here, in the midst of his friends, meet with the same hearty welcome that his illustrations have, in a journal second to none in this country or perhaps in the world.

After the lecture the parliamentary business of the section will be attended to, and the consideration of such subjects as are deemed important in advancing the special interests of photography. Also the exhibition of novelties whether in the way of pictures and apparatus, or in modes of working.

All present who are in any way interested are invited to remain and take part in the discussion of the subjects that may be brought before the section.

J. B. GARDNER,
Chairman.

The President now introduced Mr. Kingsley, who was enthusiastically welcomed by a large and distinguished audience of artists, engravers, photographers and a host of others, more or less interested in the business of picture making. From the beginning to the close of the lecture, Mr. Kingsley won the attention and frequent applause of his auditors, and a unanimous vote ot thanks for his valuable contribution to the section. [See page 86.]

The lecture was followed by a discussion on "Orthochromatic Photography."

Dr. CHARLES EHRMANN gave a detailed account of some of the latest experiments made both in Europe and America, in regard to procuring in, or by, photography the true value of the primary colors, and urged the importance of scientific photographers doing what they could toward solving this, the most difficult of problems that has ever challenged the ingenuity of the photographic world.

Mr. NEWTON, in reply, said that the true value of color could never be reached by photography until we could reproduce the colors as seen in nature, and to do this, in his judgment, was an utter impossibility. He stated that he had in his possession a book written more than thirty years ago by a reverend gentleman by the name of Hill, who, so far as he knew, had never been excelled in writing receipts for making pictures in colors, while at the same time they (the receipts) contributed as much to the notoriety of their author as any may hope to receive who have since paraded themselves before the photographic world by writing marvelous stories of their feats in attempting what to his mind, was simply impossible.

At the close of the debate, Mr. J. W. Champney was invited to entertain the audience for the remaining portion of the session. Mr. Champney at first declined, but at the same time aptly eulogized the lecture of the evening. He however finally acceeded to the unanimous call of the section and proceeded to sketch on the blackboard a number of characters and characteristics involving principles of art instructive and amusing to both artists and art photographers.

At the close of Mr. Champney's "Chalk Talk," the audience were invited to make a critical examination of the prize pictures presented to the section. A large number of experts availed themselves of the invitation, but even the oldest and best of them found the work quite beyond their criticism, and all went away uttering only words of praise. If the verdict of those present is to be relied upon, this collection of pictures is the most valuable for photographic study of any ever presented to the American Institute. A unanimous vote of thanks was tendered to the givers for this valuable gift, and the section, on motion, then adjourned.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

FIRST WINTER LANTERN EXHIBITION, DECEMBER 29, 1886.

(*Continued.*)

THE *President* then stated that he had been requested by the Album Committee to say that but twenty members had sent in their photographs in response to the call issued some time ago. He advised those who had not given it attention that they could have their portraits taken gratis at Messrs. Pach Bros., 841 Broadway, upon presenting their membership ticket. Also called attention to the increased daily attendance of members in the operating rooms, and to the fact that new additional lockers had been constructed to meet the increased demand. Keys to the front door could be had on application to Mr. Baker or to the President, and a photographer was in daily attendance at the rooms to do printing and assist members.

He then announced that Ortgies gallery, at 845 Broadway, had been secured for the first joint exhibition of photographs, which would be opened Saturday evening, March 26th, with a private view for members and the press, and close Saturday, April 2d. Season tickets would be issued. It was expected many choice pictures would be exhibited, and it was hoped that members would take an interest in the exhibition and do what they could to make it a success. The regulations would be issued shortly.

The next meeting was announced for January 11th, when one or two papers will be read. The announcement of the resignation of Mr. C. Volney King, a Director, in consequence of absence from the city, was then made, and the following gentlemen had been elected active members of the society: William E. Bond, J. H. Whitehouse, R. Dickinson Jewett, B. N. Mitchell, William J. Cassard, and C. E. Strong; and as a corresponding member, Marcus H. Rogers, East Brimfield, Mass.

After wishing all those present a "Happy New Year," the President stated that 100 of the 200 lantern slides recently received from the London Camera Club would be thrown upon the screen, followed by a few made by some of our own members.

Mr. J. WELLS CHAMPNEY having offered his services, would give the title of the pictures as they appeared, and make such comments as might seem advisable.

The lights were then lowered, and the exhibition commenced, the lantern being worked by Messrs. Lawrence and Mason.

Slides by the following geutlemen were shown and much admired: Greenwood Pim, G. Mason, F. Howard, Stacpoole Westropp, C. Phipps Lucas, C. Bird, E. Ferreo, D. Harbord, W. H. Chapman, F. J. Barclay, T. Perkins, J. H. Buchanan, J. Harris Stone, R. Duncuft, J. H. Knight, W. Wainwright, F. Beasley, Jr., and J. S. Gale, all of the English Camera Club. Then followed some home slides: One, "Smiles and Tears," by Marcus Rogers, was particularly admired; being two Florida darkie boys caught with a detective camera. Also two slides on Prof. Newbury's new plates; and others by Messrs. Hugh C. Baker, of Hamilton. Canada; Richard H. Lawrence, William Frisbie, Alvey A. Adee, and Dr. H. G. Piffard.

REGULAR MEETING, TUESDAY EVENING, JANUARY 11, 1887.

The meeting was called to order at 8.15 P.M., *President* BEACH in the chair.

In the absence of the Secretary, Mr. George H. Cook acted as Secretary *pro tem.*

A synopsis of the minutes of the last meeting was read and approved.

A communication from Anthony & Co., and the report of the Librarian was then read as follows.

591 BROADWAY, NEW YORK,
January 6, 1887.

F. C. BEACH, Esq.,
361 Broadway, New York.

DEAR SIR,—We take pleasure in sending you herewith, for the Society of Amateur Photographers, with our compliments, a copy of Anthony's Photo Series, No. 20, just published, entitled, "Photography in the Studio and in the Field," by E. M. Estabrooke.

Very truly yours,
E. & H. T. ANTHONY & Co.

REPORT OF THE LIBRARIAN.

January 11, 1887.

The following books have been received since the meeting of December 29, 1886. The American Annual and *Photographic Times* Almanac for 1887, edited by C. W. Canfield, presented by the Scovill Manufacturing Co.; "Photography in the Studio and in the Field," by E. M. Estabrooke, presented by E. & H. T. Anthony & Co., and a pamphlet entitled "Researches Relating to Invertebrata, Cryptogamia, Microscopy," etc., by Edgar M. Crookshank, presented by the author. Purchased: "l'Eclairage des Portraits Photographiques," by C. Klary, 1887; "Traite Pratique de Gravure et Impression sur Zinc," by Geymet, 2 volumes, 1887. Presented by the author: a pamphlet on "Practical Amateur Photography," by C. C. Vevers, 1887.

Respectfully submitted.
R. BAKER, *Librarian.*

The Secretary *pro tem.* then read a portion of a new circular to be sent out to amateurs and others announcing the particulars of the photographic exhibition to be held at the Ortgies Galleries, 845 Broadway, from March 26th to April 2d. [See BULLETIN, page 37.]

The following are the names of persons recently elected members of the society: As an Active Member, J. E. Schermerhorn; Associate Members, F. F. Cobb and Miss Elizabeth A. Slade; Corresponding Member, John Carbutt, of Philadelphia.

The *President*—I expected to have a specia new camera here this evening, but was disappointed. In place of it I have an improved Hoover shutter, which may be of some interest to you, and I will briefly describe its special points. [Shutter then described.]

These are the three principal advantages of the shutter: That it has a diaphragm and shutter combined in one; that you can make a time movement by pressing the bulb valve below here; and have an instantaneous attachment for a pneumatic release; also that you can quickly change from a small stop to a full opening, and from a full opening to a small stop.

The next matter of interest that we have is the Woodbury tissue, which has recently been creating quite an excitement on the other side. I propose to read a few points connected with the tissue first and the holder, show you them, and then develop a picture. [The President then read a paper entitled "The Vergara Dark Slide and Improved Woodbury Tissue." [See page 84.]

The *President*.—My experience with the film has not been very large, but what I have done has been very satisfactory, and I have here a negative which I developed yesterday, which was exposed—the shutter being at full opening—instantaneously on a cloudy day. The negative will give you some idea of the transparency of the tissue. I have two prints made from it, one the right way and the other the wrong way. You can turn the negative whichever side you like and obtain a distinct print. The tissue appears to be made of gummed paper, especially prepared to make it transparent. Then it is afterwards coated on both sides with gelatino-bromide emulsion. In developing, the paper acts very nicely. It does not curl up, but keeps flat and nice. It is very similar to a plate. Now I propose to develop a picture, which will show you the *modus operandi*.

At the same time, or shortly after, Mr. D. C. Hoover will give us a demonstration in developing the improved ferrotype dry plate, and in connection with this I might say I have always had a hope that there would some day be an invention gotten out by which an amateur or others could take a picture of their friends on a dry plate and develop, dry, and deliver in a short time. There are many, perhaps, who are not familiar with photographic processes, and imagine as soon as you have made an exposure they should see the picture. So by having a few plates of this kind on hand, amateurs will be able to accommodate this particular class of persons very easily. At any rate I am sure the experiment will be interesting to you.

[A short recess was then taken, the lights were turned down, and members were invited to come up to the stand and witness the development of the film. Mr. Beach opened an Anthony holder having an exposed film held on the face of a glass plate (4 x 5). On removing the film he slipped it edgewise under water in a tray, letting it remain there for two minutes, while he mixed the developer as follows: To one and a half ounces of water 50 minims of the Beach pyro and 40 minims of the potash solution were added. This was poured into a second tray; then the wet tissue was removed and dexterously slipped under the developer to avoid air bubbles, and the dish rocked. In about a minute's time the picture appeared faintly; but on lifting the tissue out and turning it over, a very strong image was visible, showing that by accident the exposed face of the film had been placed downward in the developer. This, however, did not interfere with the progress of the development, but simply proved that, because of the thinness of the tissue, development was quickly observable from either side.

The shadows kept very clear and the development proceeded regularly. The tissue retained its flat form, showing no tendency to curl. Within five minutes the development was completed; then the developer was poured off and the film cleansed with one or two changes of water; after this it was placed in the hypo, 1 to 6, to fix.

An excellent negative, representing a snow scene, resulted, full of detail and half tones. The exposure was made with a Ross rapid symmetrical lens, *f*-40, in three seconds, at 3 o'clock in the afternoon during a snow-storm.]

Mr. Beach mentioned that it was very important to handle the tissue carefully, as the gelatine film was likely to loosen from the support at the corners where held between the fingers, making the film liable to turn back upon itself.

The film, when dry, by reflected light presents a peculiar wrinkled appearance, which one would suppose would materially prevent the obtaining of sharp silver prints. But in practice it is found that the pressure of the printing frame compels the sensitive paper to fill the depressions in the film, thereby producing a distinct print.

A specimen dry negative was passed around with silver prints made from each side. The President suggested the feasibility of squeegeeing the film on hard rubber to make the tissue dry smoothly.

The success of the experiment showed that the process was much more simple and easier to work than the stripping of films from paper, and was destined to have an important bearing in the future as a practical substitute for glass. Mr. Beach had not tested the rapidity of the tissue on a sensitometer, but from his few experiments thought it might be a trifle slower than Cramer's lightning plates.

As he finished the development of the film, he called Mr. DeWitt C. Hoover to come forward and show the members the best mode to follow in the development of the new ferrotype dry plates recently introduced in this country by the Phenix Plate Company. He had two plates which had been exposed upstairs during the day, which he proceeded to develop. The following solutions were employed:

No. 1.

Pyrogallic acid	1 ounce.
Citric acid	40 grains.
Nitric acid	6 drops.
Water	12 ounces.

No. 2.

Phenix stock solution.

Keep the stock solution securely corked.

Make the developer as follows:

No. 1	¼ to 1 dram.
No. 2	4 drams.
Water	4 ounces.

If the plate is over-exposed, use a little more water; if under-exposed, add an additional dram of No. 2.

While the development was going on, among other things Mr. Hoover said, was the following:

This alkaline developer is a secret preparation at present, and will be for this year, and then we will give it away. I will tell you now that it is nothing more or less than ammonia with bromides. I use four drams of this, known as the Phenix stock solution, to four ounces of the developer. The surface of the plate is very dull at first and when I wet it, it will brighten up. [He then wet it.] The first failures in this matter were due to the fact that we undertook to use too strong an alkali developer. [Mr. Hoover then proceeded to develop.] I advise the pouring on and off of the developer over the face, and allow the drapery to come slowly. The next picture to be developed will be one containing drapery. The moment you can see something in the deep shadows then you stop without regard to what the high lights are. There is one thing imperative. You must fix with cyanide, not with soda. I find that cyanide can be used with impunity provided you don't take it internally. I use it a great deal to take the silver off my fingers. [After development, Mr. Hoover washed the plate and fixed it with cyanide of potassium.] This is a ten-grain solution. More than twelve grains to the ounce would be injurious. These plates are only one-quarter as sensitive as the present fast plates. Still you can make very nice instantaneous pictures on them. I frequently over-expose, with a lens with a full aperture in the twentieth part of a second, more than I have under-exposed. If you should by chance over-develop a picture that has clothing or shadows, you simply let it remain in the cyanide a little longer, and it will gradually come down to the right point.

[Mr. Hoover succeeded in obtaining two excellent ferrotypes, which were exhibited to the members. The method of working was quite simple, and the point was emphasized that to obtain a good result a liberal exposure must be given and a very weak developer used.]

The following supplementary directions for developing the plates are given.

The image, when in the developer, should begin to appear in about ten seconds. Continue development until the details are well out.

Be careful not to over-develop and thereby obscure the shadows.

Wash thoroughly after development and fix in.

FIXING SOLUTION.

Cyanide of potassium	120 grains.
Water	10 ounces.

To which add a few drops of a strong solution of caustic potash. This will remove the disagreable odor of the cyanide and produce purer whites.

Let the plate remain in this solution until all the bromide of silver disappears, then wash thoroughly and immerse in a strong solution of alum or chrome alum. Wash again and dry spontaneously.

Occasionally a slight blue veil may remain after the picture appears to be fixed; this may be removed by allowing the plate to remain a few seconds longer in the cyanide solution.

During cold weather the development may proceed slowly; this may be obviated by using tepid water in the developer.

The contraction of the gelatine during cold weather may also cause a slight curling of the plate; this may be obviated by keeping the plates in a warm room.

A dead-leaden color of image is usually produced by an excess of pyro, and a veiled appearance of shadows indicates an excess of No. 2 solution with forced development.

(To be continued.)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—G. J. S. writes: I am trying my hand at emulsion making. Will you or some of the readers of the BULLETIN give me a simple method of making the emulsion without running water. Can emulsion be put into tin vessels without injuring the emulsion? Please give directions for a drying box for drying plates after they are coated.

A.—Running water is not absolutely necessary for the washing of gelatine emulsion. Such washing can be readily accomplished by squeezing the emulsion through clean coarse canvas into a glass or earthen vessel of water. By this means the gelatine is broken into shreds and readily settles. After settling, it may be stirred up with water several times until clean; and finally drained in muslin or a hair sieve. You cannot use tin vessels without injuring the emulsion. We could not give directions for a drying box in this column without drawings. A little ingenuity will enable you to construct such a box easily, remembering only that it should be light-tight.

Q.—W. H. writes: Can negatives be made by the incandescent light? If so, how many lights are needed, and how many candle power?

A.—Incandescent electric lights could be used to take photographs with; but a specially prepared plate with erythrosin is necessary for the purpose. These lights are usually from 12 to 16 candle power, and it would take probably a dozen such lights to get sufficient illumination to obtain a good negative.

Q.—C. K. writes: In the formula for a soda developer on a dry plate package, is pyrogallic acid meant when the word "pyro" is used?

A.—This appears to us a rather simple question to answer. Yes, certainly! Pyro is an abbreviation for pyrogallic acid or pyrogallol, and is used in the same manner as "hypo" is instead of sodium hyposulphite.

Q.—A. B. C. writes: Please state, through column of BULLETIN, the best way to ascertain when prints on N. P. A. paper are fixed. I find no directions on this subject in the books, and can see no change in the prints themselves to go by when they have been in the solution say five to ten minutes. Occasionally they fade considerably, but these can hardly be the proper indications. What is the secret?

A.—There is no secret about fixing albumen prints. The only thing is to be sure they are fixed, and for this purpose they must be left in the hypo solution about twenty minutes, the bath being one of hyposulphite of soda in eight parts of water. If you examine the prints by transmitted light a few minutes after putting them in the hypo bath, you will notice a mottled appearance. When this disappears the prints are nearly fixed, and should remain a little while longer; but the time given above is the best rule to follow to be sure.

Q.—E. C. T. writes: In the PHOTOGRAPHIC BULLETIN of January 8, 1887, and the number previous, is an article headed "Photographic Chemigraphy," a translation I think. In it (the January 8th number) is used a term which has caused me considerable anxiety to know definitely what is meant. The substance called "Brush color" is an important element in the composition of the etching preparations, but amongst the printers of all branches and the painters, no one here can tell me. I think it is a kind of ink used either by lithographers or plate printers, but that does not signify. I shall feel grateful if you will enlighten me in regard to it at some time most convenient to you.

A.—The term used is probably meant to apply to the ordinary colors ground in oil and used by painters. We are not sure about this, and perhaps some of our readers can help us out.

Q.—T. W. R. incloses a piece of albumen paper that is covered with tears, and writes: Please inform me what I can do to prevent this trouble? Every sheet I have tried to silver rolls up and cockles so badly, and has so many tear drops, I cannot use it.

A.—The first trouble with this paper is that it has been kept in too dry a place. And when paper exhibits tear drops during the silvering the sheets should be well rubbed with a wad of soft cotton cloth before floating. To prevent the paper becoming so hard and brittle it should be kept in a moderately warm room (about sixty degrees Fahrenheit) which has had water sprinkled on the floor, and should remain in the room about twenty-four hours before use.

Q.—F. J. writes: I have commenced using the ammonia developer, but have some difficulty in getting the same kind of ammonia every time. Will you kindly give the relative strength of Stronger Water Ammonia, Conct. Liq. Amm., and Aqua Am. FFFF, and oblige a subscriber?

A.—The terms which you give above as applied to ammonia have little meaning because the solution changes constantly. The strongest ammonia made is 0.884 specific gravity, and contains 36 per cent. ammonia gas. A 30 per cent. solution has a specific gravity of 0.897; a 20 per cent., 0.925; 10 per cent., 0.960.

Q.—A. B. W. writes: Is it the custom to use potassium iodide in making dry plates? I sometimes use it and it colors the plates a canary yellow. Would not ammonium chloride do as well? Are the positive dry plates of any account? I bought some, but have had no success with them.

A.—Potassium iodide is nearly always used in dry plates, but in very small quantities, and gives the plates a yellow tinge, more or less strong according to the quantity used. Chloride of ammonium could be used, but it would make the plates slow. The positive dry plates are good. We have some good pictures made on them.

Q.—J. W. R. writes: Please answer the following questions if it is not too much trouble, and you will confer a great favor. 1st. How long have bromide prints (as portraits) been in use? 2d. Are they as durable as a free-hand crayon portrait when finished or worked over in crayon? 3d. Are they bought by people of means to any great extent so far as you know? 4th. Is the preparation of bromide paper anything like that used in solar prints?

A.—Bromide prints have been in use somewhat over a year. They are durable if properly made and carefully mounted, especially when finished over in crayon. They are bought by all kinds of people who desire handsome large portraits. The paper is prepared by special machinery on a large scale and not like solar print paper.

Views Caught with the Drop Shutter.

THE National Rod and Reel Association will hold its fifth annual tournament at Central Park, New York, on May 25th or 26th, and, amongst other prizes offered, we note a photographic outfit contributed by our publishers. Our angling subscribers should compete for this and the other prizes offered.

N. C. THAYER & Co., of State street, Chicago, send us their very handsome catalogue of photographic supplies. It is a small quarto of over 200 pages, beautifully printed and with excellent illustrations. The contents embrace everything needed by the photographer, from the grass mat to the frame for the crayon enlargements. It is one of the most complete catalogues we have seen, and contains all the best work from the factories of our publishers. We also note a number of formulas and useful tables for the photographer, a new feature in catalogues.

A FIRE on February 6th, in Brydon's drug store, at Danville, West Va., extended to FRAZER's photographic studio, which was entirely destroyed.

FOWLER, of Indianapolis, lost $4,000 from a fire in his studio on Washington street on February 6th, which, unfortunately, was not fully insured.

HARRY LAY, of Wilkesbarre, Pa., lost his studio from a fire in the building in which he was located on February 13th. Loss about $3,000; insurance small.

WE regret to note the loss by fire on February 17th of the Artotype rooms of Mr. EDWARD BIERSTADT, of Reade street, New York. Many valuable pictures were destroyed that were in process of reproduction by photo-mechanical means.

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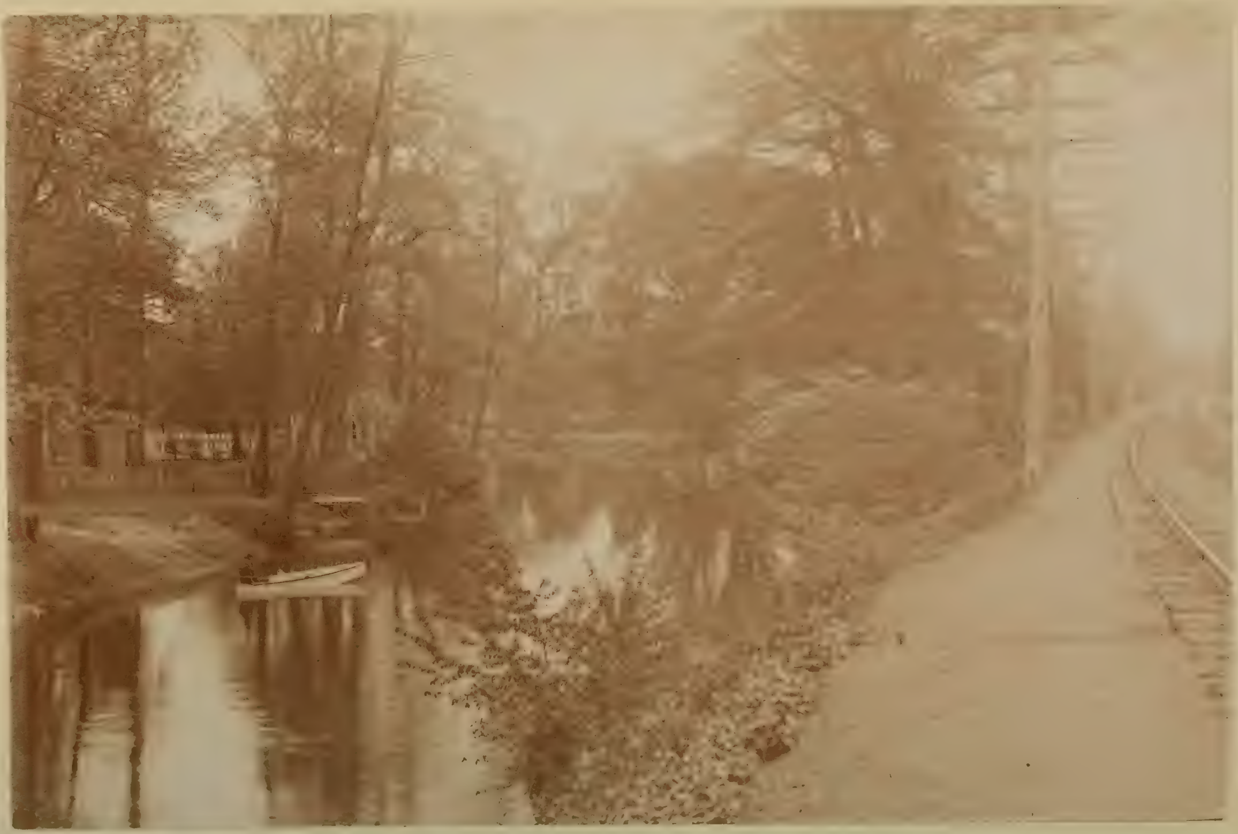

Negative on the
Stanley Dry Plate
with
Platyscope Lens.

A Glimpse of the Bronx.

Printed by
J. B. Hunter,
on N. P. A. Pense
Extra Bril. Albumen Paper.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MARCH 12, 1887. Vol. XVIII.—No. 5.

CELESTIAL PHOTOGRAPHY.

We have received from Professor Edward C. Pickering, of the Harvard College Observatory, two photographs of star spectra which far surpass anything of the kind ever produced before. Professor Pickering has undertaken, with the generous assistance of Mrs. Henry Draper, to continue the researches in stellar spectrum photography which had been planned, and to a considerable extent already successfully carried out, by her husband, the late Professor Henry Draper, of New York.

The research of which these magnificent photographs are the first outcome, was undertaken by Professor Pickering especially as a memorial to Dr. Draper, and the results of the investigation will be published and known as the Henry Draper Memorial.

The earlier stellar photographs taken at the Harvard College Observatory were obtained with a large Voigtlander lens having a prism in front of, it and the whole so mounted that the length of the spectrum was perpendicular to the motion of the star. Since the image of a star is a point, the spectrum produced by this combination would obviously be a line without much width. If the driving clock carrying the apparatus is slightly retarded, the image of the star will be made to move perpendicularly to the direction of the spectrum, thus broadening the line and giving the spectrum appreciable width. In this way there were obtained upon a single plate, and without any slit, photographs of the spectra of all the stars within the field of view. Selecting from these the brighter and more interesting objects, Professor Pickering determined to photograph them separately. For this purpose he made use of the exceptionally fine eleven-inch Clark refractor, provided with a special corrector for the photographic rays, which, with its accessories and the necessary funds for the expenses of the investigation, was placed at his disposal by Mrs. Draper.

Some of the first negatives taken with this new apparatus were shown to the members of the National Academy of Sciences at the November meeting in Boston, and were universally regarded as far superior to anything that had before been seen. Since that time the work has been continued; a large number of additional stars have been photographed, with an exposure of an hour, and still better results have been obtained.

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In addition to this, Professor Pickering has made experiments in enlarging the original negatives, and the photographs which we have received are silver positives thus enlarged. The original negatives, on 4 by 5 plates, show spectra 5 centimeters long by $\frac{1}{10}$ centimeter wide. These have been enlarged to 25 centimeters long and 7 centimeters wide. Our readers will wonder how a negative can be enlarged seventy-fold in width, and at the same time only five-fold in length. This is accomplished by a special device of Professor Pickering's, which consists simply in using, in conjunction with the ordinary enlarging lens, an additional lens, which is cylindrical instead of spherical. As is well known a cylindrical lens refracts only in one direction, viz., perpendicular to its axis, while the ordinary spherical lens refracts in both directions. In this case the ordinary lens magnifies five-fold, while the cylindrical lens enlarges fourteen-fold. The magnified spectrum will be enlarged in length five-fold by the ordinary lens, while the width will be magnified five-fold by the ordinary lens, and fourteen-fold by the cylindrical lens, in all 5 x 14, or seventy-fold. The photographs which we have received are marvels of the photographic art, both in sharpness and detail. One is the spectrum of Alpha Cygni, and the other Alpha Tauri or, as commonly known, Aldebaran. The former spectrum, among a large number of lines, contains five strong ones, of which four correspond to the solar lines G, h, H, and K. The spectrum of Alpha Tauri contains an immense number of lines massed in the blue, the result of which evidently is to give the star its red color. In Alpha Cygni the distribution of the absorption lines is so general that the colors are balanced and the light of the star is white. These photographs therefore show in a remarkably clear and beautiful manner the essential differences in the character of the fixed stars themselves, although their investigation and elucidation will be a matter of an enormous amount of further research.

These results are not final. The spectra mentioned above were taken with the aid of two prisms only, and Professor Pickering is now using four, thereby increasing the length from 5 to 12 centimeters; whilst almost daily, improvements are being made, which we shall be glad to bring to the notice of our readers.

A specially interesting point in this connection is the fact that investigations of this kind were begun by Dr. John W. Draper, who took a daguerreotype of the moon on the 23d of March, 1840, the first celestial photograph ever taken—and who photographed the solar spectrum in 1843, and by this means discovered three dark lines in the ultra red. These investigations were continued by his son, Dr. Henry Draper, who by the aid of a reflecting telescope constructed entirely by his own hands, took the well known magnificent photograph of the moon, and subsequently the spectra of many of the fixed stars and the nebula in Orion.

The remarkable success which Professor Pickering has achieved, as well by the novelty of his methods as by the skill with which he has put them in practice, has led, we understand, to a very considerable enlargement of the original plan. We are glad to know that Mrs. Draper's interest in this research has led her to place at Professor Pickering's disposal largely increased facilities, and we may therefore hope for results of the greatest value to science, and hitherto altogether unexpected. Results too, which will form the most fitting monument to the memory of Henry Draper.

EDITORIAL NOTES.

Some time ago we had occasion to notice in this journal the wonderful work in instantaneous photography then being done by Herr Ottomar Anschütz, of Lissa, Posen. Since that time this gentleman has been at work, under the auspices of the Prussian government, amplifying and improving his appliances for the taking of instantaneous pictures that exhibit the motions of men and animals. This work is so important and is of such universal interest, that Herr Anschütz is anxious to bring the matter before the artists and men of science of all nations. It is not likely that any one except a national government could support such an enterprise; and it affords an opportunity for others to obtain copies of these remarkable pictures. The subjects embrace all kinds of wild animals, such as boars, wolves, pigeons, storks, dogs, horses, monkeys; together with men in action, such as throwing a stone, a spear, etc. In a collection of 1,300 pictures almost every conceivable subject is represented. Quite a number of the photographs have been reproduced by the gelatine printing process and are very cheap. Those of our readers who are interested in this great work should write Herr Anschütz, at Lissa, Posen, Germany.

The use of a yellow screen in orthochromatic photography was pointed out twenty-eight years ago in the first volume of the *Photographic News* on page 61. And furthermore the advantage of bromide of silver over the iodide for the same purpose was pointed out at that time in conjunction with the old collodion process. The same writer (probably William Crookes, the celebrated English chemist) also calls attention to the use of solution of quinine sulphate for cutting off all the light above the indigo, and recommends its use in conjunction with the yellow screen.

M. Leon Vidal, in the *Moniteur de la Photographie,* recommends the toning of gelatino-bromide positives by using a bath of platinum chloride (platinic tetrachloride). By this means the silver is replaced by platinum, and treatment with a solution of copper chloride or perchloride of iron converts any unchanged silver into chloride, which latter can be removed with a bath of hyposulphite, leaving a picture in pure platinum, than which there is no more unchangeable metal known.

In this issue of the Bulletin we give the first part of a very interesting lecture upon "Photographic Lenses," by Mr. J. Traill Taylor, before the Society of Arts in London. We strongly recommend all our subscribers to read this paper, as it is the most complete review of the subject that we know of, and from such a pen as Mr. Taylor's is of unusual interest.

We are indebted to Mr. F. E. Patterson, of Kittanning, Pa., for a couple of pictures that are unique in the manner of their mounting. They are made on two common white plates, such as are used at the breakfast table, and it is astonishing what a handsome effect is produced by the round white border that surrounds the picture. Here is an idea for our amateur readers. We tender our thanks to Mr. Patterson for his kind remembrance of us.

We have been under the impression that Tropical Plates were much slower than the ordinary rapid varieties. Some days ago we were working under this idea, and very soon came to the conclusion that we were laboring under a delusion, and that the Tropical Plates were really very rapid. On discussing the matter with Mr. Stanley, we found he had come to the conclusion that the Tropical Plates are just as quick as the Lightning Plate made by him. We give this hint for the benefit of our readers, who, like ourselves, may have had an idea that Tropical Plates are slow, and hope we shall save them from many failures due to over-exposure, as was the case with us.

ON another page of the BULLETIN will be found a notice of a presentation album to be given to the Shah of Persia. This is intended to be a collection of pictures illustrating the manners and customs as well as the scenery of the United States, and we urge our readers to contribute to this national expression of good feeling by sending prints to our publishers to be placed in the album. Work of either professional or amateur photographers will be acceptable, and due credit will be given to each.

THE new optical glass from the factory of Herr Schott, in Jena, is not yet in more than an experimental state as regards durability. Some of the varieties made are very sensitive to dampness, some are said to be soft, and others cannot be made free from bubbles. We can readily understand that much remains to be done before this glass can be considered safe to be used in photographic lenses.

A NEW amateur photographic society was organized January 25, 1887, called the "Cleveland Camera Club," with the following staff of officers: Rev. C. S. Pomeroy, *President;* Dr. Robert Dayton, *Vice-President;* Arthur D. Cutter, *Treasurer;* William T. Higbee, *Secretary.* The club hold their meetings the first and third Tuesdays of every month, at 18 Euclid avenue, and now has twenty members and is steadily on the increase. Our Cleveland subscribers and those in the vicinity should encourage this club.

WE are indebted to Dr. E. L. Wilson for a handsomely bound copy of the last year's numbers of the *Philadelphia Photographer.* This will prove a very useful addition to our library of reference, and we tender the donor our best thanks for the handsome gift.

THE PHOTOGRAPHIC MERCHANTS' BOARD OF TRADE.

To the Editors of the BULLETIN:

WILL you kindly permit me space to say that that the statement made in the last issue of the BULLETIN, that the Photographic Merchants' Board of Trade had probably held its last meeting, is rather premature. The Board adjourned to meet in Chicago August 8th next, and if the last meeting is any index of vitality, the Board has many years of usefulness before it. The question of disbanding was squarely put and negatived by a large majority, and it is *quite* evident that a strong attachment still exists among the members for the old Board.

Respectfully, D. K. CADY,
Secretary of Photographic Merchants' Board of Trade.

[Our advices from Chicago at the time of the last meeting of the Board led us to believe that our view of the case was the correct one.—EDS.]

OUR ILLUSTRATION.

The charming little view which forms the frontispiece of this issue of the Bulletin gives an excellent idea of the good qualities of the Platyscope lens in the hands of a careful worker. The picture is one of a series from negatives taken by Mr. J. R Husson, of New York City, upon the Stanley plates, and shows their remarkable qualities in the production of fine detail and sharp definition in the shadows.

The series of views of which our illustration is one, were taken upon that picturesque little stream, the Bronx River, that meanders through the grassy fields and over the pebbles in the section of country a little north of New York City, and which has recently been annexed to the great metropolis. Its thickly wooded banks and stony bed afford many opportunities for charming picturesque views as it flows through West Farms and ultimately empties into Long Island Sound near Port Morris. The prints were all made by J. B. Hunter, of New York, upon the N. P. A. Albumen Paper, the popularity of which is the best proof of its many good qualities.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

News about Orthochromatic Processes—Ferrotypes with Gelatine Plates—Preliminary Bathing before Development—New Optical German Glass and New Lens from Suter—Eastman Paper in Germany—Spoiling of Plates in Newly Varnished Plate Holders—Magnesium Light—Curiosity in German Copyright—Acknowledgment of Loescher & Petsch's Photographs in Vienna.

The celebrated chemist Liebig uses the following expression in one of his chemical letters: "Every invention, before being generally recognized, has to pass through three states. In the first it is proven that the invention is good for nothing, that it is an impossibility; in the second the assertion is made that it is nothing new, that more than a hundred years ago some people have known about the invention; and only in the third state the invention will ripen and bear fruit."

This expression came to memory when reading in a contemporary the article of Scolik and Mallmann about bathing plates with ammonia erythrosin silver.

Bathing plates with erythrosin silver as an optical sensitizer has been practiced by Obernetter and myself as early as May, 1886, and our formula was published in the June number of the *Photographische Mittheilungen.* Several months later our experiments were repeated by Scolik and Mallmann and published by them as a new invention, their article about this commencing with the assertion:

"A Berlin photographic journal recently asserted that eoside of silver, dissolved in ammonia and mixed with the emulsion, increased its yellow-sensitiveness to ten times that of pure eosine."

I take the liberty to complete this communication. Inasmuch as the Berlin journal mentioned is the *Photographische Mittheilungen*, and that this did not make the assertion recently, but three years ago (*Photographische Mittheilungen*, 1884, XXI, p. 42), and that it was myself who made the observation in question.

Scolik and Mallmann assert also to have discovered the optical sensitizing power of azalin, after the azalin plates introduced by me had already been in the market for two years. The German Photographer's Almanac makes the following remarks about this:

"Accepted, that the different parts that gunpowder is composed of was not known yet, and the same was analyzed by Messrs. Scolik and Mallmann. Further accepted, these gentlemen had discovered the constituent parts and asserted in consequence thereof they had discovered the gunpowder, would anybody believe it? *Sapienti sat.*". Besides this, I also refer to my formula in my last letter, and only remark that the orthochromatic plates without yellow screens have proved excellent lately in astronomy. My son took a view of the star group of Orion with ordinary and eosine silver plates with the same time of exposure. The number of stars upon the ordinary plate was 53, on the eosine plate there were 110.

From the sublime to the ridiculous there is but one step, also from high to low. Ferrotypes are considered as the lowest kind of photography, and their producers are looked upon as on an equal footing with traveling gymnasts, jugglers, acrobats and menageries at village fairs. Some time ago there was a general belief that that kind of picture-making would die out gradually. But this is not to be thought of, since the gelatine process lends a helping hand to ferrotype work in the production of sensitive ferro plates. As a curiosity it might be mentioned that our ferrotypers here generally style themselves as "American quick photographers."

Captain Himly has lately again recommended a preliminary bath for shortening development, namely, nitro-prusside of sodium, in proportion 1 to 500, dissolved in water. It is also as suitable for the oxalate developer as for pyro, while a preliminary bath of hypo gives only good results with the oxalate developer, as is well known. Captain Himly has demonstrated the advantageous action of this bath in the *Verein zur Forderung der Photographie.* Not all preliminary baths which are recommended show the desired action. In the *Bulletin de la Société Française de Photographie* is a communication from M. de Villeholles and M. Audra, in which it is said that a bath of 15 grams chloride of sodium in 100 grams of water will prevent the dissolving of the film from the plate. Besides this, it is asserted that the chloride of sodium bath accelerates the development considerably, and more than by any other means yet known.

The latter has not found confirmation by the experiments made by my son. A Sach's plate, exposed in a stereo apparatus, cut in two parts, of which one was treated as above, and the other without the bath, both parts took equally long to develop with oxalate and showed no difference, the half having been in the preliminary bath appearing a little quicker, but being pretty soon completely equaled by the other.

The washing in the chloride of sodium solution before development was also without any particular effect. With Perutz-Obernetter plates he had no better success.

Through several papers you have already had the news from the new establishment of Schott, of Jena, on the production of optical glasses. This is of the greatest interest for the whole optical world; but, so far, astronomers and microscopists only have derived advantage from the same. The first photographic optician working with the new glasses is Suter, of Basle. He has brought into the market lately a new aplanatic lens which possesses greater strength of light than all previous ones made by him, and this has been tested in my laboratory. The focal distance gave as result after three tests as the mean 356.63 mm. The objective having an opening of only 58 mm., the proportion of this to the focal distance is 1 to 6.15, a proportion about as shown by the Voigtlander euryscope. The instrument has six diaphragms of 59.8, 47.7, 34, 24, 12 and 9 mm. diameter, and the quadratic proportion of the diaphragm-diameter is put on them, so that the correct line of exposure can be readily seen and calculated. The diameter of the light circle is 469 mm., and 348 mm. the distance of the ground glass from the diaphragm opening, the visual angle of the objective thus being calculated at 66° 55′.

A practical test proved that the instrument has about equal in strength of light with a Voigtlander euryscope and that it will cut an 8 x 10 plate sharply with smallest diaphragm.

Of all American products at present in the market here, the Eastman paper seems to have the greatest popularity. In every show case can be seen an enlargement upon Eastman paper, and amateurs have been using it for some time to make prints by lamplight. What can be done with the same in clever hands, can be seen in the report of my pupil, Mr. Stieglitz, from New York. He says:

"I have experimented a good deal with Eastman paper, and think that it is the best material for amateurs besides the platinum paper. One hundred copies can be produced in three hours with a little smartness.

"I made the following experiment. I made a negative and a positive upon Eastman paper in exactly 39 minutes, as follows:

NEGATIVE.

Focusing and exposure	2 minutes.
Development	3 "
Fixing	3 "
Washing	1 minute.

POSITIVE.

Copying (printing) upon Eastman paper (direct from the wet plate, without harming the plate in the least)	1 minute.
Development and acid bath	6 minutes.
Fixing	6 "
Washing (including eau de javelle)	10 "
Drying in alcohol	4 "
Coating and mounting	3 "
Total	39 minutes.

"How would it be to introduce Eastman paper for proofs, and thus prevent waiting a week in winter sometimes for one?

"For rapidity, I can certainly recommend the Eastman paper."

In my January letter I wrote to you about spoiling plates in newly varnished plate holders. The experiments made at that time were continued by my son. He left a dry plate for fifty days in the same plate holder. When developing he had the same black stripe again at the side nearest to the hinges. Another plate from a new plate holder was not particularly influenced after eight days. To decide now whether it was due to the varnish, he scraped off a little from a new holder and let it lay several days, and in the dark, upon a gelatine plate. In the development, spots could be observed distinctly where the varnish had been placed.

I also wrote to you about the increased use of magnesium wire. A new example was shown by Mr. Kuntze at the last meeting; the picture of a lady on her death-bed which had been taken at night with a Voigtlander euryscope, No. 3, third diaphragm, with magnesium and kerosene light. During exposure the light at a distance of one-half m. was moved slowly on the light side, also once upon the shadow side, so that all parts were properly lit. About one and one-half m. of ribbon was used. The picture was as successful as could be desired under the circumstances.

We have now also a copyright law for photography in Germany, but it allows the copying of photographs in works of industry. Chocolate has been put into market here lately at 2½ cents a cake. Each cake is decorated with a photographic imitation of the well-known picture of the three sons of Prince Wilhelm, made by Reichardt, and the question has been discussed at our meeting if it is the sense of the law to evade the same in such a manner, the opinion being that the picture forms the most important part in this case. Our lawyers here are mostly of an opposite opinion, and we expect to have an interesting judicial case.

Last year I expressed my regret about the excellent pictures of Loescher and Petsch having obtained no prize at the St. Louis Convention, and it affords me pleasure to inform you that they have now obtained a medal from the Photographic Society in Vienna for the same work.

Berlin, February, 1887.

LIGHTING THE DARK ROOM.

BY VICTOR SCHUMANN.

Again and again I have noticed that light which has passed through a ruby glass is recommended as the safest and best. But this assertion is admissible only to a limited degree. Now-a-days, with the orthochromatic plate playing an important part in dry plate photography, the lantern or lamp with ruby glass is of much less value than in times past, when the highly sensitive gelatine plate contained only bromide of silver as a light sensitive constituent. Even at the time when a small quantity of iodide of silver was added to the bromide of silver, the question of lighting the dark room entered into a new phase. Iodide of silver, if introduced in a suitable manner into the sensitive film, makes the gelatine plate much more sensitive for blue rays than bromide of silver alone. A lamp which has no influence upon pure bromide of silver gelatine, may cause much fog with bromo-iodized gelatine. When the film is colored with a yellow sensitizer it will be worse yet, as faint ruby light may already cause the formation of dense fog. With a red sensitive plate, as furnished by the cyanin bath, the danger of fog formation increases to a high degree, and in this special case a ruby lamp might be considered a great mistake. All those who hold the opinion of ruby glass retarding the effective rays, even through a red sensitive cyanin film, might just as well with equal rights develop an ordinary gelatine plate in blue and only sufficiently subdued light. I have taken a view of the spectrum of orange and red upon a cyanin plate in a few minutes through dark ruby glass, and convinced myself repeatedly how useless the ruby light is in its application to films sensitized in such a manner.

More than a year ago I pointed out that in a case like the foregoing, a lamp with cyan-blue glass, by application of candle or kerosene light, will retard the chemically effective rays far more completely than the glasses of the usual color.

Years ago I also used ruby lamps, but have discarded them long ago, as my weakened eyes could not stand the hurtful effect of the red light.

The present light of my dark room is arranged with a white glass globe covered several times with some dark-brown tissue paper. A small space of about 5 by 7 c.m. is covered with a triple layer of that paper and from this surface I obtain the light for developing. The rest of the globe is covered six times and then coated with a hard varnish.

The light from this lamp is free of all fog and has no disadvantageous effect, but is agreeable to the eye. All visitors to my dark room have fully recognized the advantages of this light.

All my orthochromatic experiments and tests have been executed by this light and have never given me cause to complain. I would recommend therefore this brown light to all, and particularly to those whose eyes cannot stand the red glare without disadvantages.

LEIPZIG, February, 1887.

SNOW-SCAPES.

BY ADELAIDE SKEEL.

LIKE the man who could not see the town for the houses, the photographer who waits for leafy June before he begins to take landscape views, will not be able to see the country for the foliage. When heavy shade trees overshadow all picturesqueness, we sigh in vain for light, since we know, alas! how imperfectly our sunbeam pencils sketch in the dark. Hence these days of early spring tempt us to leave lantern-slide making and transparency work, that we may discover what a wonderful light-reflecting medium is the white snow. Maybe it has already began to melt in patches, yet surely there is enough left for our 4 x 5 and 8 x 10 pictures. We imagined winter had laid nature bare, but instead we find he has covered her with ermine fit for earls, and hung every twig with pearls and diamonds. This is a magic world; one hour the fields are as solidly white as the whitest coated dry plate, the next as wet as the wettest plate of old process days. Here a view of melting snow gives us a Niagara in miniature, and again ten feet of ice glisten in our camera like a mile-wide river in a skating carnival.

If only for scientific experiment, it is interesting to note what swiftness of plate and shutter snow-scapes require, the maximum of light being as great as at mid-ocean. Again, artistic amateurs will be delighted to find twenty objects, such as cow-shed and wood-pile, made beautiful as picture material when covered with snow; and since fashion has made certain old-time sports famous, any one who wishes to turn an honest penny into needed acid or plates can do nothing better than to photograph a toboggan party. Or to choose simpler materials, let him shoot at our street gamins as they race down hill on their long "bobs." Better yet, since work makes hay of life, will be the realistic view he can take of the same lads dragging their heavy sled up the steep slide for a second dash. Sometimes gallantry will have led them to give some little sister a ride up hill; more often some work-shirking boy—destined to get free passes on the railroads by and by—will be seen lying face downward on the high board seat, and in either case the additional figure will give an interesting feature to the picture.

Children grouped about a rudely made snow fort make good subjects for the home artist, who simply wishes a suggestive portrait of Charlie or Tom, a single figure rolling up a big snow-ball, a plough making its slow way through shining drifts; an unbroken wintry road; a crusted lane; *verglas* on maple boughs against a background of dark evergreen trees; all give delightful bits as new to photography as midsummer landscapes are old.

To outing lovers, ice-boat racing, groups of skaters and trotters are pleasing, but less observed scenes, such as the breaking up of our frozen river in early April, make more original pictures. A 4 x 5 view of one huge ice boulder crashing up against another; a black pool between them; a curve of snow-crusted pebbly beach beneath, blue sky above; has all the feeling of the Rhone glacier about it, yet only fishermen spreading their shad nets note these common everyday sights.

Snow-scapes are specially attractive when finished on rough bromide paper, where soft blackness and whiteness lends itself to the chance-like sketch. It is against the printed rules, yet a certain Christmas-card sparkle and glitter, inartistic but realistic, is obtained by adding a few additional drops of iron to the developing solution.

For all this outdoor work avoid taking cold, as well as views, by choosing a day when the mercury is above 40°; there are plenty ahead of us before the grass grows green. Wrap up warmly; the focusing cloth may be worn as a black cloud around the ears, and as far as possible make all preparations before leaving home. Also remember the advice given to tourists last summer: Before setting out with tripod or detective bag choose your view, make your appointment with the sun and keep it. It may be said, for the less hardy among us, that many beautiful scenes can be taken from one's own window—views which are sometimes pronounced "too dreadfully dreary and lonesome," by those who, having eyes, yet see not, but which are very charming to the artistic amateur.

Avoiding then those zero days when the most highly advertised slides will not pull for frozen fingers, let us choose a mild thawing noon-day before the April sun has wasted the snow quite away, and secure pictures of ice-palaces, glaciers and toboggan slides, the very sight of which shall cool us when we frill and blister next August.

ON A METHOD OF MOUNTING ALBUMEN PRINTS ON ANY KIND OF PAPER.

By Professor O. N. Rood, *of Columbia College.*

The impossibility of mounting albumen prints on note paper or printer's paper with the ordinary materials, is perfectly understood by all photographers. Books cannot be illustrated by albumen prints without the employment of cardboard, nor can the amateur paste his production in a letter without encountering an amount of crumpling and cockling which destroys alike the appearance of letter and photograph. An attempt has been made to obviate this difficulty by the use of gelatine dissolved in the smallest possible quantity of water, but the formula of Mr. G. W. Simpson did not in my hands yield satisfactory results. After making one or two experiments in other directions, the object being to avoid the use of water altogether, I found that a thick solution of bleached shellac in alcohol answered every requirement for any kind of paper likely to be used, as well as for card-board, the mounted prints being perfectly flat and firmly attached. My general practice is to roll up the damp prints, as they come from the washing trays, in little bundles with the albumen face outwards, and allow them to dry spontaneously; each bundle is rolled in a sheet of note or foolscap paper. When the prints are dry they are flattened and placed in a book or portfolio, and are then ready to be trimmed. After this operation the thick shellac is applied and they are mounted in the usual way, the only precaution being that the shellac must not be allowed to get on the face of the print, as there is no means of removing it; for if alcohol be applied, it penetrates the paper and dilutes the varnish, which then makes its appearance on the face of the print in spots. The prints are kept under moderate pressure till dry. The varnish allows a certain amount of adjustment on the mount, quite enough leeway for one accustomed to such operations.

The prints by this means are very firmly attached to the paper; there is no possibility of any injurious reaction taking place between the varnish and the albumen film, for they never come in contact; the print is protected at its back by the most durable varnish with which we are acquainted, and it lies flat. At present I know of only one drawback to the process proposed; if it is desired to remove a print from its mount, of course *alcohol* must be employed instead of water.

Prints mounted on note paper, printer's paper and card-board accompany this communication.

[The specimens sent by Professor Rood are remarkably good, and free from curl and cockling.—Eds.]

A ROYAL PRESENT.

The Department of State has appointed us as their representatives to make a collection of views of this country to present to the Shah of Persia, and have requested us to notify any persons who have made photographs which they think suitable for such purpose, that the Department would be glad to receive prints of the photographs which any one may desire to donate, and will accept such as they deem suitable, displaying the name of the donor on the mounts, due acknowledgment being made of their receipt. Photographs not accepted by the Department will be carefully returned to the contributors. These photographs should all be made on plates at least 6½ x 8½ inches in size, and should be sent unmounted, the wrapper being marked "for the Shah," and addressed to E. & H. T. Anthony & Co., 591 Broadway, New York. Those wishing to contribute should send their specimens at the earliest possible date, and all must be in before April 1st.

As it is desired to make this contribution as large as possible, it is hoped that all who can will respond freely. The photographs may be of any nature, exhibiting the scenery, habits and customs of this country.

◆

Although not engaged in the photo business, I still take great delight in reading the Bulletin, and keeping posted upon the improvements and progress of my old love. I think your books will show that I am one of your oldest subscribers, having taken it from the beginning. William Barringer.

Inclosed find my check for subscription to Bulletin for 1887. Continue at same address. I am very much pleased with the Bulletin and could not do without it. Yours truly, A. P. Hallock.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

Jonathan Fallowfield was founder of the well-known establishment for photo requisites in Lambeth.

1863. "A Simple and Practical Guide to Photography." Edited by W. Hunt Lee. South London Photographic Depot, Lambeth.

The *Photographic News* remarked of this little book at the time of its appearance that it was "really an introduction to a catalogue of chemicals, etc."

George Thomas Fisher, Jr.

1843. "Photogenic Manipulation." 12mo. Knight, optician, Foster lane. 2s. 6d.

The term "Photogenic" was introduced by Fox-Talbot in 1839, and so it became more or less associated with his calotype process. It fell into disuse after the introduction of the collodion process in 1851.

P. Le Neve Foster was for many years Secretary of the Society of Arts, whose rooms in John street, Adelphi, have long been a meeting place for London photographers.

1876. British Manufacturing Industries. Vol. VIII. Article on Photography, pp. 145–175. Post 8vo. Stanford, Charing Cross. 3s. 6d.

Second edition, 1877.

J. Fowler.

1865. "Porcelain Picture." Post 8vo. Simpkins. 4s. I am under the impression that this is an American book.

Edward Frankland, born 1825, is a distinguished chemist, who has lately resigned the Professorship of Chemistry in the Government School of Science at South Kensington. His contributions to photography are indirect rather than direct. The following volume includes the papers which he has contributed to various periodicals and scientific societies during the last thirty years.

1877. "Experimental Researches in Pure, Applied, and Physical Chemistry." Includes papers on "The Action of Solar Light on Ethylic Iodide," pp. 118–138; "Artificial Light, including Coal Gas;" "Magnesium as a Source of Light;" "Measurement of Solar Intensity," pp. 999–1026. 8vo. 1047 pp. Illustrated. Van Voorst. 31s. 6d.

Francis Galton, born 1822, is the grandson of Dr. Erasmus Darwin. He is best known in photography by his system of "composite portraiture," which consists in printing from the negatives of several individuals so as to combine their characteristics in one picture. The leading results are detailed in the following book:

1883. "Inquiries into Human Faculty and its Development," 8vo. pp. xii and 387. Four plates and frontispiece. Macmillan, 16s.

A. Ganot.

1881. "Elementary Treatise on Physics: Experimental and Applied." Translated from the French and edited by E. Atkinson. Eleventh edition (first edition, 1863). Post 8vo. 1005 pp. Illustrated. (Photography, pp. 546–548). Longman & Co. 15s.

I have named this book because it is such an admirable guide to those parts of Light, Heat, Wave Motion, etc., which concern the photographer very closely.

James Glaisher was born about 1809, and attained fame as an aeronaut and meteorologist. For many years past he has presided over the meetings of the Photographic Society of Great Britain.

1852. Reports of the Juries on the Exhibition of 1851. Photography, see Class X, pp. 243–245, and 274–279. Reporter, James Glaisher. Royal 8vo. Spicer Brothers and Clowes & Sons. 21s.

In this interesting work we find no mention of the collodion process, although we believe a few specimens were introduced into the great "World's Fair" during its closing months. We are told that "for daguerreotype portraits America stands prominently forward. * * * America stands alone for stern development of character; her work, with few exceptions, rejects all accessories, presents a faithful transcript of the subject, and yields to none in excellence of execution." Of lens makers the United States were represented by Harrison only. The daguerreotypes from the same land were by Lawrence (New York); Brady; Whipple (whose picture of the moon is highly praised); Mayall, Brans (New York); Meade Brothers; Pratt, Richmond & Co.; Whitehurst, of Virginia (who showed twelve views of Niagara); Gavit, Root, Hogg, and Fontyne & Porter (of Cincinnati). "Langenheim has two large Talbotypes, one a view of Philadelphia; also a series of subjects on glass, designated hyalotypes, excellently adapted for magic-lanthorn subjects."

Jesse Gostick.

1860. "Mechanical Photography: Including Positive, Negative, and Dry Plate Processes—Photographic Printing—Transparencies—Micro-Photographs—and Life-size Portraits—Photographic Difficulties—Backgrounds—Solutions, and Miscellaneous Instructions." 48 pp. Paper covers. G. T. Stevenson, 54 Paternoster row. 3s. (Second edition, 1863.)

This little pamphlet offers another proof of the axiom, "The smaller the book, the longer the title!" The author tells us in the introduction that "My method is simple, and I call it Mechanical Photography because it is little more than manual labor." (*To be continued.*)

THE GREAT SATCHEL MYSTERY.

BY RADY.

A beautiful valley among the grand old Catskill Mountains contains a pretty little village that seems to hold forth extra attractions to scores of city people who expect to summer away from home.

The quaint old farm-house seems to-night to be almost swelling with importance and people; and as the sun with its good-night rays starts the little windows blinking, the good housewife closes the bright green blinds and hums a new tune as she thinks of the fresh arrival that swells her coffers seven dollars per week.

The new arrival by the evening train was a stranger to all in the house, and many were the comments upon his appearance. As he stepped down from the large depot wagon to the porch, white high hat, light overcoat on his arm, supporting himself with a bundle of canes and umbrellas, and the alligator traveling satchel hung by a strap across his shoulder, it seemed as though even the mosquito tuned himself anew, and joined little Miss Snub in the chorus of "I'm a dude."

The new-comer was discussed before all the looking-glasses in the house, as the ladies prepared their evening toilet. He was voted charming and good looking, and they wondered if he was well "fixed," and, if available, "quite the thing."

The arrival, the only man in this rustic retreat (save the farmer and his shock-headed hopeful), disposed of his goods and chattels in his new boudoir, and gave himself up to the intricacies of his very intricate toilet, to be interrupted by the clanging of the only tongue in the house that never talked enough.

The landlady's announcement at tea, "Mr. Catchem—Ladies!" caused a frigid nod, and a cessation of hostilities against the supper, nothing more, and as again the conversation was resumed, Mr. Catchem was alone. Alone, with sixteen at the table. Alone to read each face and feature. Mrs. Gruff, stout and forty, beamed on each and all with the sweet smile a good supper can cause.

Mrs. Spindle, lean and lank, and not an amateur as to age, with her upper lip suggestive of what "might have been" had she been born a man, with eyes that could not be deceived, evidently voted Catchem a male "lost in the general delivery." Miss Snub at last attracted his attention, and it seemed as though the young man had met his fate, at least so his face expressed it as he gazed on this marvelous beauty. Turn-up nose, auburn hair, slightly "light struck," and freckled, "under-developed," and a mouth which could have done service for twins; with these first-class attractions she filled the stage of this young man's ambition.

Days passed into a week, and its finish found the young man a leading attraction at the farm. They all doted on him and were it not for a mystery surrounding him, he might have had proposals the acceptance of which would have made him a martyr.

But the mystery—"Ah! there's the rub." It was the alligator bag that figured so wonderfully in this boarder's career. He never walked without it; carried it with the greatest care on all occasions; peered at times intently into its scaly side, and several of the boarders vowed they had heard "the thing click like a clock," and Jim, the farmer's boy, declared "he had seen the durned thing open and it was chock full of machines." What was he doing with red light in his room at night? These and other alarming circumstances drew around the household a sort of icy film that even Catchem's brightest smile could not melt.

But at last the end came. A Mr. Sneek, of grocery fame, from the village hard by, occasionally dropped in to enjoy the society of the young ladies, and at last it came to be plainly seen that Miss Snub was by no means unattractive in his eyes, and Mr. Catchem found he had a rival. Wherever he turned, whichever way he walked, with no company now save the lifeless 'gator, he found Sneek and Snub.

Alas! She was not for him.

One morning rumors flew thick and fast about the house that Sneek had skipped the town, and some little cash had either gone before or traveled with him.

Later rumors were confirmed, and Miss Snub wept for two long hours, and then through the mist a sweet smile dawned on Catchem. So kindly she treated the young man now that he nearly melted, and when at last the matter culminated in her arms about his neck, it was all he could do to unclasp them and tell her it could not be.

Then came the climax. Mrs. Gruff and Mrs. Spindle declared he had gone too far already to keep from Miss Snub the consummation. "Ladies, May I now tell my story; or, rather, may it please you my satchel will a tale unfold?" cried Catchem, and in a few words he told them all.

A camera, neatly concealed in the satchel, enabled this young boarder to take pictures at will, and when all was duly explained, and about fifty well chosen views brought to light, Miss Snub drew her drapery closer and faded from view.

No breach of promise suit ever appeared, for what could be done in the face of Catchem's pictures?

The Sneek and Snub combinations were various and intricate, and the camera had "caught on the fly" such loving looks as pass only between "two souls with but a single thought." The views were lovely and voted a success by all the young man's friends; and now, when looking through his album he sees the face of Miss Snub, faithless but fair, he can only turn the page and console himself with his great photographic triumph—a portrait of Mrs. Spindle, so carefully taken, and so nicely focused, that one can almost see the down on the upper lip bend and rise again in undulating waves as the breeze blows across the picture.

So ended a Catskill romance; so ended a love match; and so ended THE GREAT SATCHEL MYSTERY!

ENLARGING ON BROMIDE PAPER.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York.]

To the amateur there are perhaps no two branches of photography more attractive and interesting during our winter evenings than the making of lantern slides on dry plates or enlarging on bromide paper.

Now that we have a paper supplied of a uniform sensitiveness and well coated, the making of enlargements after a few trials may be reduced to a certainty, and is as easy to accomplish as the development of a dry plate.

With the introduction of the paper, special apparatus has been invented for more conveniently working it, but tools of the simplest description can be employed if one only has the inclination to prepare them, so that an outfit to make enlargements need not necessarily be expensive.

Some two or three years ago I exhibited a model of an apparatus adapted to use an ordinary camera reversed for enlarging. In the place of the ground glass was located the negative, which was illuminated by the light from a "Mohring" kerosene lamp burner. A ground glass was interposed between the negative and lamp to evenly diffuse the light. A tall chimney was provided to promote a good draught. The screen was located a short distance away, and was arranged so that the image could be thrown on a ground glass for focusing, then by rotating the pivoted board, the sensitive paper was secured in the proper place ready for the enlargement.

I have set up this model to-night that you may see the general arrangement. When the lights are lowered you may see the operation of the apparatus to better advantage; and I should further remark, that enlarging by this plan, though one of the simplest that may be devised, is, at the same time, the slowest, since the light is greatly retarded by the ground glass behind the negative. With a negative of moderate density, an exposure of from twenty to twenty-five minutes is required.

If, in place of the ground glass, we substitute a double condenser of sufficient size to fully cover the negative, we would increase the brilliancy of the image to such an extent as to be able to reduce the exposures nearly three-fourths. Hence, special enlarging apparatus is now furnished by manufacturers, wherein all the essentials in the shape of condensers, lamps, reflectors and devices for adjusting the plate in relation to the lens and condensers, are fixed for the convenience of the operator, and with which an exposure of but a few seconds only is needed. I have arranged the society's optical lantern for making the enlargement this evening, using the lime light, in order that we may save a little time and show the picture up more brilliantly. The negative, made on a collodion emulsion plate, is placed reversed and film side toward the lens, in the lantern slide carrier attached to the back of the camera bellows, the space between the latter and the condensers being covered by a focusing cloth to shut out the light. A Ross 6 x 5 rapid symmetrical lens stopped to *f*-16 is attached to the front. About six feet away is an Eastman enlarging easel, on the white paper of which the image is focused. The relative size of the image varies according to distance of the lens from the negative, and the distance of the focusing screen from the lens. The screen you observe is adapted to hold a box on top, containing a roll of sensitive paper. When you are ready to make the exposure you simply cover the lens with a cap holding a non-actinic glass, open the hinged clamping frame, then lift the cover of the supply box and draw down the sensitive paper in position over the face of the screen, then clamp it by closing the hinged frame; you thus hold the paper smoothly in place without the bother of using pins.

After exposure, the sensitive sheet is cut from the roll and laid aside for development.

You thus see the process of arranging for the exposure is very simple.

It is better to hit the exposure very nearly correct and then work with a moderately strong normal developer rather than try and suit the developer to the exposure.

This is easily ascertained by taking small strips of bromide paper and making two or three separate trial exposures on them, observing that which develops with the most brilliant blacks and best contrast.

You can then duplicate that exposure on a full sheet and be very certain of securing satisfactory results. A point in exposing should not be overlooked, and that is, that it is very easy to obtain an enlargement from a negative having vigorous contrasts, which will be quite harmonious as a whole, by simply manipulating a straw-board, having a small aperture cut in it, between the lens and screen. We first give an exposure suitable to bring out the details in the shadow or transparent portions of the negative, then we interpose the straw-board sheet between the lens and screen and cut off the light entirely from the sensitive paper except that portion which passes through the aperture. By moving the straw-board laterally with the hand, we transfer the bright disk of light to any part of the picture we desire. Hence, if we want to give a greater exposure to the dense portions of the negative, we simply guide the light to the corresponding portions of the picture on the screen, and thus obtain a uniform exposure.

In making the exposure at this time, I shall manipulate with a sheet of straw-board and illustrate the mode of working, as we have a negative of great contrast. Upon development, the detail in the white portions of the picture will appear equally as quick as that in the shadows, giving a very pleasing and satisfactory effect.

The usual ferrous oxalate developer is preferable for the development of enlargements, for the reason that blacker tones are obtained and the whites kept clearer.

It is very important that the respective solutions of oxalate of potash and sulphate of iron be thoroughly saturated. Boiling or very warm water should be used for dissolving the salts. The potash solution should be made slightly acid with sulphuric acid, which is determined when blue litmus paper dipped in the solution turns slightly red.

In developing, general practice has proved that it is safer to commence with an old ferrous oxalate solution until a trace of the picture appears, then pour off and cover the picture with a fresh developer made as follows:

Oxalate of potash solution	6 ounces.
Sulphate of iron solution	½ ounce.
Bromide of potassium (50 grains to the ounce)	½ dram.

which gives better control over the development. If under-exposed, the iron may be increased one ounce, making 1½ ounces to 6 of oxalate. The iron should always be poured into the oxalate.

In order to avoid any after yellow tinge to the whites, it is recommended that as soon as the developer is drained from the print, the latter be immediately flowed over with a weak solution of acetic acid and water (1 dram of acid to 16 ounces of water); then it is washed and fixed face downwards in a fresh solution of hypo, 1 part of hypo to 8 of water, which usually takes from five to ten minutes.

The print should be moved about occasionally while in the hypo.

After fixing, washing in a tank of changing water for two hours is necessary to thoroughly eliminate the hypo.

One of the chief items of expense in making large-sized enlargements is suitable trays; these however can now be easily and quickly made.

Any carpenter can make a box the size wanted, with low sides, in which heavy rubber gossamer cloth, such as is used for water-proof goods, is fitted and tacked to the upper inside edges. I have a specimen tray here, which will show you more clearly what I mean.

Another form of tray can be made of heavy straw-board paper thoroughly coated with paraffine. This is readily turned up at the edges, and, when secured by a small wire clamp at the corners, makes a convenient and light utensil. Under the bottom should be placed a loose board or sheet of glass to keep the tray level.

The pyro developer may be used instead of iron if it is preferred, but it must be made very weak in the alkali. It never should be used in the same dish in which the iron developer has been employed, otherwise a blackening of the whites will occur.

Any trace of hypo on the fingers contaminates the developer, causing disagreeable stains to sometimes appear just after fixing. If there are several enlargements to make, it is better to develop all successively first, laying each one as it comes from the acetic acid solution in a tank of water to wash, then fix all successively in a fresh hypo solution. In this way there will be no chance for the hypo to creep into the developer. My experience teaches me that it is not advisable to develop more than two enlargements with the same developer, otherwise the iron, becoming somewhat oxidized by absorption of oxygen from the air, stains the paper with a disagreeable yellow color, which is not observable until the print is dry, and which it is difficult, if not impossible, to afterwards eliminate.

Usually it is advisable to allow the enlargement to dry spontaneously with a dead finish, but in some cases in small enlargements it may be desirable to give it a gloss. This is done very easily by draining off the surplus water from the sheet after removal from the washing tank, and placing it face downward upon a specially prepared heavy ferrotype plate known as squeegee plates, and pressing it in close contact with a rubber roller squeegee made on the principle of a common bread roller. A simple way to make it is to purchase a section of rubber pipe twelve inches long, one-quarter of an inch thick, having an interior diameter of one inch. By stretching the pipe over a round stick six inches longer than the pipe the squeegee is complete. The back of the print may be relieved of surplus moisture by the use of a sheet of blotting-paper. I prefer the roller squeegee to the scraping kind, especially for bromide paper.

Having now given you a few of the principal points to be observed in making bromide enlargements, we will proceed, by means of an experiment with the apparatus here set up, to give a practical demonstration. I have not touched on one or two other methods of enlarging, as I desired to confine myself to those which were the simplest, easiest, and most practical for the amateur to pursue.

[The negative used was five eighths of an inch in diameter, the head of the distinguished singer Madame Boloca, and was enlarged to three-quarter life size.]

ART IN PHOTOGRAPHY.

BY ELBRIDGE KINGSLEY.

(*Continued.*)

The bane of all progression and excellence is the feeling that we can get something for nothing. The facility of execution in the photograph makes it a prey to the commercial spirit that wants to produce works of art by simply turning a crank.

What has cost an artist years of toil and study must be turned out in a few minutes better than the original. We have photo-mechanical processes, that are turning hand work upside down, and we are going at railroad speed to a happy land where the fairest creations of the Almighty can be dished out with a spoon. All for twenty-five cents. We can tell an artist more about his own work than he himself ever dreamed of. We can construct his pictures all over for him, in the daily press, with illustrations to match; in short, do everything but the downright hard work of doing something of worth ourselves. Verily, we are a wonderful people!

Yet, it is strange how we like to have the hard worker in Art look in once in a while, just to give color to our proceedings.

After a few productions with our new toy we want an artist to touch us up a little bit, so as to get some new life. We are afraid the public will get tired and want something new, or we are afraid a rival across the way will get a better machine than we have.

So we are training ourselves to chase every momentary ism, to value charlatanism rather than sober, honest work; to worship that which touches the surface rather than that which reaches within and stimulates to a higher level of existence.

Have you a good object before you, that seems of great value? Then earn it by giving the equivalent cost, and you can hold it against all comers.

Thus far our thoughts have been confined to the simple visible phases of Nature and their study. Or, to use a familiar term, Realistic Art. We have appealed to no special feeling in the matter. We have tried to build a plain, comfortable house, and expected no tears to cement the bricks and mortar. Yet, you will find, if your work has been in earnest, the feelings have been there all the same, and, strange to say, are the most important part of the whole matter. True, the Photographer may well say, "What have I to do with the night, the wind in the trees, or any of this intangible nonsense?" You have the same need for it, as all humanity has need for it. The need of a pervading influence that will make your work *live;* a human sentiment, that stimulates the imagination to see more than the reality. With this influence it is possible for you to produce a great work of art and defy all laws of construction, and without it be perfectly correct and still have an empty shell as the fruit of your labor.

No one needs a guide in visiting a childhood home, to find the best phase in which to represent it. The all-pervading influence of home will be as music to the soul, and every note a harmony. The whistle will sing itself.

I have been in a dark wood at night, with the whole heavens lighted with forest fires. Perfectly safe, and yet alone, fancying myself a child, fleeing in terror from an avenging spirit.—I have stood on the mountain-side and seen the storm-clouds appear. It seemed as if all the hosts of heaven were marshaling for battle. And so real was the sentiment of the scene, that in the exaltation of the moment I was riding with the squadrons of cloud masses as they swept over the field.—I have been snugly encased in the bunk of a sketching car at night during a fearful thunder-storm, with lightning crashing through the trees, the rain pounding like pistol shots on the zinc roof, and forked limbs scratching against the sides as if to tear me in pieces. Then, like the growls of a disappointed angry beast, the storm passes, and I hear the mutterings lessening in the distance, leaving behind only a gentle sighing of the pines and a few pattering rain drops.—I have looked down upon a river in the evening and seen the mist arise from its lair. Have beheld the long, cold, slimy serpent go curling upward to pluck the golden stars one by one from the vault of heaven.

Of course such experiences are hard to produce in *any* Art, and there is one implement you will need at the finish. That is, a good stout rope to hang yourself with. If *you* don't use it on yourself somebody else will.

If you have experiences that you would like to bring out in some way, I would simply ask you this question, "What are you afraid of?" "Ah! there is a hole in my pants! My shoes are not blacked, and hair not combed! What *will* people think!"

If your mind is in its element playing with the lightning, the hole in the pants is of little consequence, and those in sympathy with you will not know of it. But those who are watching for such flaws in you, will find them even though you are resplendent in jewels and royal purple.

It is astonishing how consistent and yet inconsistent, how powerful and yet how weak, the Art which appeals to the feelings and imagination can be, and live. It seems to have laws of its own, akin to poetry and music. Perhaps it can be properly called Poetical Art. It insists that the feelings shall be reproduced rather than the tangible facts. I don't know that the best work of this kind is in conflict with the greater truths of Nature, but it is constantly sacrificing the trifles. Perhaps the proper way to put it is, that it is a distillation of Nature's essences through a human soul, and the product is Poetical Art. However, whatever it is, most of us are glad to accept it whenever we have the chance.

I don't know that it is possible to analyze the *methods* of such work. It is like trying to put a noose over the passions of love and hate, or trying to catch a flea. You think you have him all settled, and he is gone. I don't know that the photographer is worse off in this matter than any one else. He has the advantage of quickness in getting whatever he can as a memory of his impressions. Many is the time I should have been very glad of a number of photographs of a given scene where my feelings were impressed, even though they would have been too realistic. I think artists will all agree that it is desirable to have all the material possible, of whatever kind.

As a case in point I give an experience which made a strong impression on my mind at the time, so strong, that I have felt that any tangible representation of the fact would be wholly inadequate to bring back the reality of the experience. It was a trip down the Lachine Rapids of the St. Lawrence River.

Just at sunset, on a summer evening, the little steamer, crowded with passengers, pushed out from the wharf at Lachine, with her bow headed for the rapids, and destined for Montreal. At the same time, another boat, puffing heavy columns of black smoke from her chimneys, passed on up the river. A crowd of Indian canoes shot between the two steamers as they separated, and while being tossed on the sparkling waves, seemed like corks rolling in a sea of molten gold.

The upper sky was heavy with cumuli clouds, but broken at the horizon, and lighted a brilliant scarlet and yellow. The rolling smoke of the ascending steamer joined the upper clouds like a gigantic crawling monster, but the lower edges were lurid in the direct rays of the setting sun. A few moments brought the downward speeding vessel to the verge of the fall. With stilled engines, she poised for a moment with bated breath, like a great white bird about to plunge from a cliff. Beneath, the mighty current was black and resistless. In front, the path was hid in awful mist and gloomy shadow. Behind, the track was a golden pathway direct to a glorious sunset sky. She was leaving heaven and plunging into the very jaws of hell!

Down she sped—to the right—to the left—almost upon the breakers—yet never touching. Passing rocky islands with their tossing pines, like a flash, enveloped in foam, she drove on out of the sunlight into the gloomy shadow:—till finally she emerged into the still waters below, passed under the Victoria bridge, and sailed up to meet the twinkling lights of Montreal.

I have seen many pictures of the shooting of Lachine Rapids, but none of them brought back the feeling of this experience. And, *strange* to *say*, a friend has lately painted a marine subject, that does bring back the experience. His picture has nothing to do with the rapids. But the sunset, in contrast with a turbulent waste of waters, a helpless boat tossing on the waves, convey the main issues of the picture just the same.

Hence the conclusion is inevitable. On the line of Nature's values, we find the chords that vibrate in unison with human sentiment and feeling. We learn also that hard facts may be but a deception, and a challenge to criticism, and that no truth can be so definitely settled but that it can be swallowed by a greater truth. Also this should be our principle of construction—we must commence at the foundation first. If we would appeal to the emotions of others, we must analyze the cause of our own emotions, and put together the elements that have produced them, without special regard to the manner of doing, remembering that it is the mind and not the matter. And if we would know what a camera can do, we will do well to study the kind and manner of the man that is behind it. Consider what he would produce if the result followed the wish of the heart as closely as footprints follow the pressure of the foot upon the sand.

And finally,

If the photographer will but make his means the servant of his intellect, feeling and will; if he will but harness his camera and chemicals as steeds to the chariot wheels of the Sun, there is no just reason *why* he cannot ride as Apollo, and dipping his pen in the light, write high upon the pages of History, his name as an Artist.

EXHIBITION OF THE SCHOOL OF MINES PHOTOGRAPHIC SOCIETY.

This energetic little society of amateur photographers is made up of the students in the Scientific Department of Columbia College, and when we think of the long list of studies which they have to complete every year, it is most remarkable to find that they get the opportunities to make the handsome photographs which can be seen at their exhibitions. Last year was their first effort at an exhibition and a large number of pictures were shown. This year the number of pictures is not large, but in many cases the work shows improvement.

C. W. and A. A. Stoughton show a large variety of pictures, platinotypes, silver prints, and gelatino-bromide enlargements. Some of their woodland scenes are very good. In groups the negatives are good and generally well arranged, but the prints are flat and too leaden in color. Some excellent examples of instantaneous work by these gentlemen were exhibited in pictures of bicyclists and views of locomotives.

A. C. Gildersleeve had a large number of pictures, embracing yachts, groups, machinery, interiors, and all were very successful. Some views in Central Park were full of beauty and the most exquisite detail in the foliage. One composition picture was rather horrible, but nevertheless finely done. This was an anatomical demonstration, in which a subject is stretched upon a table and two men stand beside it, one with a surgeon's knife about to make an incision in the chest. The grouping, the surrounding shelves with bottles and other paraphernalia of a dissecting room, give a very realistic appearance to the picture; while the light streaming into the window helps to make the whole a most striking scene. The artistic merit of the picture is of the first order.

H. N. Tiemann showed a fine platinotype of a woodland scene full of delicate beauty in the tangled limbs of the trees and the lights and shades. We are sorry we could not find anything else by Mr. Tiemann, as we know of much good work from his hands.

W. M. Whitfield had a frame of 4 x 5 pictures, mostly views. The work was very good and remarkably clean and sharp.

John Slade showed a frame of 4 x 5 prints, consisting of groups at the seashore, boats, architecture, and cattle. The best pictures were various views of cottages at Seabright, which were excellent specimens of photographic work.

Ernest A. Congdon had a number of 5 x 8 views, the best of which were scenes apparently taken on the piazza of a country house. The others were not pleasing from an artistic standpoint.

J. W. Cromwell, Jr., exhibited a number of 5 x 8 and 4 x 5 prints which were very good. The architectural pictures were the best, notably the "House at Peekskill," which was excellent.

C. H. Simmons had a number of pictures, consisting of groups, interiors, and boating scenes. The interiors were very good, especially an 8 x 10 upright, which was the best photograph in the collection. The groups of college boys were also excellent in every respect.

José A. Primelle exhibited 5 x 8 and 4 x 5 prints of groups and views. These were all good, except a very flat 5 x 8 print of two ladies, full figures, which was decidedly poor.

A. H. Elliott had a number of interiors taken in a canal boat during an artist's trip upon the Raritan Canal. The groups of artists at work and in various interesting poses are remarkably sharp and clear for the long exposures necessary in such a poorly lighted place as the hold of a canal boat. The same exhibit contained some instantaneous views upon the Hudson River and scenes at the sea-shore on Long Island.

W. J. Schieffelin exhibited a number of views and portraits that were generally good; but we have seen better work by this exhibitor. "Mischief" the portrait of a little child is excellent; and "Steamboat backing" is also a capital piece of instantaneous work.

A. P. Hallock had a frame of views, groups, interiors, and machinery. This exhibitor shows an improvement over his work of last year, which was then of excellent quality. The machinery pictures, difficult work even for a professional, are very well done; and the pictures in Prospect Park, Brooklyn, are gems of photographic work. The interiors are also very good; but the pictures of the scenes at the sea-shore are not what we should expect such a worker to get. There appears to be a lack of sharpness about them that is hard to explain.

Edwin Gould had a series of 4 x 5 prints, consisting of views, groups, and architectural subjects, all of which were very good and some were excellent. Although we could not pick out any one picture that pleased us better than another, we admired the whole as good, clean photographic work.

Richard T. Wainright exhibited portraits, views, groups, and a number of yacht pictures. Some of these pictures were poor, but most of them were quite good. The poor pictures appeared to be prints from thin negatives. The instantaneous view of the steam launch on the Harlem was very fine indeed, probably the best instantaneous picture in the exhibition.

G. and G. Berry had many good portraits, some of which were excellent, especially the gentleman seated at the table with books. The views, groups, and yacht pictures were all good work.

O. B. Parker showed a number of views, all of which were quite good. Some of the pictures in Central Park, New York, were excellent.

S. B. Peek had some 5 x 8 groups that were quite good; but the picture of the locomotive was too flat to be good for much as a photograph.

Altogether, the exhibition was an interesting one, and shows that the Society has some excellent workers in its ranks.

NOTES ON THE EXHIBITION.

The first annual exhibition of photographs, comprising the work of the three leading societies in this country—the Photographic Society of Philadelphia, the Boston Camera Club, the Society of Amateur Photographers of New York—and also other American and foreign amateur and professional photographers, is to take place at Ortgies gallery, 845 Broadway, during the week commencing March 28th, and will continue until the afternoon of April 2d.

The exhibition is to be opened by a reception and private view on Saturday evening, March 26th, when it is expected there will be seen one of the largest collections of amateur photographs that has yet been shown in this country. We are informed that several foreign exhibits have been received, and at this early day as many as fifty American exhibitors have signified their intention to send exhibits. The committee estimate that one hundred different exhibitors will be represented. Lantern exhibitions having proved so attractive in former exhibitions, it is the intention of the committee to give three during the week—on Monday, Wednesday, and Friday evenings respectively.

The Board of Judges selected are James D. Smillie, Chairman; E. Wood Perry, Jr., C. Y. Turner, George G. Rockwood, George C. Cox; and the management of the exhibition is under the following Committee of Arrangements: Charles W. Canfield, Chairman; F. C. Beach, John T. Granger, Robert S. Redfield (representing the Photographic Society of Philadelphia); George E. Cabot (representing the Boston Camera Club).

A catalogue is to be issued giving the details regarding the photographs, arranged on a plan specially devised by Mr. Beach.

Amateur and professional photographers are invited to send exhibits, which should be delivered, addressed to Charles W. Canfield, Chairman, 122 West 36th street, New York, on or before March 19th.

PHOTOGRAPHIC LENSES.

BY J. TRAILL TAYLOR.

[A Communication to the Society of Art.]*

While there are few lenses which cannot in some way or other be made to conduce to the formation of a photographic image, yet does the photographic objective differ *per se* from all others in certain characteristics.

Arriving at a definition of what forms a photographic lens by contrasting it with the object glass of a telescope, we find that whereas the function of the latter is to produce an image of objects which are transmitted axially, or in near approximation to the axis, the former must not only do this, but more, for it has to take account of rays transmitted also at considerable obliquity to the axis, and after such transmission has to project these oblique rays to distances proportionately greater than axial ones ere they come to a focus, in order to supply the conditions of a flat field. Hence the greater the obliquity of the pencils the more elongated must be the converging beam in order that this indispensable condition be fulfilled.

Again, whereas in visual lenses (by which term I here designate such as are employed in the formation of a merely visual image—as the telescope) it suffices to bring to a focus as many of the luminous or visual rays as possible, or as the irrationality of the spectrum and the glass at command will permit; the photographic lens has to take cognizance not only of these, but of those which, possessing inferior luminousness, have more energetic action. In the correction of a photographic objective for achromatism it is therefore desirable that the yellow and violet rays be united, in order that when a sharp image is seen at the focus on the camera screen, an equally sharp image will be produced on a sensitive plate placed on the same plane, technically known as working to focus, or having the visual and chemical foci coincident. To effect this in an astronomical telescope intended for photography, it is necessary that either the flint and crown elements of the objective shall be separated to some considerable extent, by which the definition both visually and photographically becomes lowered, or to have a supplementary crown glass so adjusted as to secure this condition of coincidence.

It not unfrequently happens that in a photographic lens corrected perfectly to work to focus in the center of the field, the photographic definition towards the margin will be found to be of a higher class than the visual image. From this we may deduce the fact that a formula by which direct or axial rays are achromatized, does not include the case of oblique rays otherwise than as an approximation.

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* From corrected proofs of the author.

At this stage it may be well to say that I am to speak of lenses which are formed of optical glass, as we find it in commerce at the present time, and shall avoid the realms of conjecture as to the possibilities which may arise from the practical introduction of new kinds of glass, which at present are still in the tentative or rudimentary stage. This topic belongs as yet to the optics of the future.

When photography was young, various devices to work with a large aperture, and at the same time to secure sharp definition, were had recourse to. It had been early found that single lenses would not answer, because of their actinic plane of representation being situated somewhat nearer to the lens than that of the visual focus; accordingly the single lens of the camera obscura was supplanted by the achromatic lens of the telescope, the surface of maximum convexity being placed to the outside. Owing to the circumscribed area of definition, the lens was afterwards reversed as regards position and a diaphragm placed in front. The value of Wollaston's meniscus lens was in time duly recognized as a means of securing an extended field; and a lens which I find engraved in a manual by Daguerre, published in 1839, is practically that which is being manufactured in the present year, 1887, subject in some cases to modifications, in others to none. At this juncture, and in the same year, Chevalier, a Paris optician, improved the illumination by combining two achromatic lenses.

But it was reserved for the genius of Professor Petzval, of Vienna, to make the grand discovery of the portrait lens. A year after Daguerre's discovery, the late Voigtlander, when calling upon Professor Von Ettingshausen, was asked by that gentleman whether he could determine the refracting and dispersing power of different descriptions of crown and flint glass, because Professor Petzval, who was at that time filling the mathematical chair in the University of Vienna, had made the calculation of a photographic lens which could not be executed in consequence of the qualities of the glass to be employed not being then in existence. Voigtlander, intimating his ability to do this, was asked to call immediately on Petzval, and was given a letter of introduction to that gentleman, accompanied by the observation that by furnishing the means to execute this lens he would render great service to the world and secure for himself a high reputation. The result of the interview that ensued was that Voigtlander furnished the desired information respecting the qualities of the various glasses which formed the foundation of the calculation of two combinations of lenses executed by Voigtlander, one of these being the well-known portrait combination in use at the present time, the other the orthoscopic lens, which was not introduced to public notice till 1857. The portrait lens was issued about 1841. Of all lenses extant, it is the one possessing the greatest angular aperture, by which term is understood the diameter of the lens in relation to its focus. In former times, when processes were less rapid than they now are, it is easy to conceive of the impetus given to portrait photography by the discovery of Petzval.

If a plano-convex lens, or one nearly of this form, be inserted in a camera and directed to the light, it will be observed that if the convex side be turned towards the view, an image more or less sharp will be formed at the focus, but that the area of sharpness will be exceedingly limited. By reversing the position of the lens, turning the flatter side out, the opposite result is obtained—there is no sharpness anywhere, but a generally better and more uniform image all over the focusing screen. This arises from spherical aberration, the margin of the lens when thus placed bringing the rays to a focus anterior to that effected by the central portions.

The condition for reducing this confused definition to sharpness is that a diaphragm shall be inserted in front of the lens, under such circumstances that the center of the picture shall be formed only by the center of the lens, no rays finding admission to the margin of the lens but those which come from the side of the view to be delineated, and thus fall upon the surface in a more or less oblique manner. This diaphragm is therefore absolutely necessary with a lens of the nature described, in order to secure flatness of field with good marginal, as well as central definition. It is therefore necessary that the diaphragm be situated a little distance in front of the lens, because it is only when thus placed that rays are allowed access to the lens, subject to the conditions mentioned, those which would mar the sharpness being thus excluded. It must not, however, be imagined that the same effect would be produced by reducing the diameter to the size of the aperture in the diaphragm, for in such a case, while the center would be sharp as before, the sides would be badly defined.

What has been said of the plano-convex lens is also true of the meniscus. This latter lends itself, by its form, so well to the transmission of rays possessing a great degree of obliquity to the axis, that all lenses which are intended to embrace a wide angle of subject must be of this form; but the spherical aberration being greater in a deep meniscus than in a flat lens, a stop somewhat smaller is requisite in order to its reduction. The deep meniscus possesses properties of a well-marked difference from all others. Those who desire to see the finest exemplification of the so-called "depth of focus," possible to be obtained, have only to procure a meniscus of very deep form, expose its concave side to a bright object, such as a lamp flame, and observe the image. Having got it as sharp as possible, observe to what a great extent the lens may be moved backwards and forwards without the identity of the lamp flame ceasing to be noticed. It is true that it is surrounded by an aura of false light caused by excessive spherical aberration, but the form of the flame itself is still there. In a deep meniscus the diaphragm must be small and be placed comparatively close to the lens. This permits of the transmission of a very oblique ray, the incidence of the ray being more normal than in the case of a flatter lens; hence the reason why all wide-angle lenses, whether single or in combination, must partake of the external form of the deep meniscus, and the diaphragm be placed near to the lens.

(*To be continued.*)

NEW ORLEANS CAMERA CLUB.

To the Editors of the BULLETIN.

AT a regular meeting of the New Orleans Camera Club, held February 16, 1887, the office of the Secretary was declared vacated, and Mr. William W. Crane was unanimously elected to that position. By giving publicity to this, you will favor the club and possibly be doing a service to the members of the photographic associations. Yours truly, WILLIAM W. CRANE.

* * *

THE BULLETIN reaches me regularly and promptly, and I am charmed with it. I have just succeeded in obtaining the numbers for four years back, and have had them uniformly bound, and consider them valuable additions to my photo library. Yours truly, GEORGE S. MIDDLEBROOK.

IT is a real pleasure to me when I find a new number of the BULLETIN on my study table. Its dainty exterior gives a promise which is more than fulfilled by the high quality and interest of its contents. Several of my friends—not photographers—take it simply for the beauty of its illustrations.

Very sincerely yours, W. JEROME HARRISON, England.

THE very complete reports of the proceedings of the New York Amateur Photo Society are worth the year's subscription, not to mention the illustrations and excellent contributed articles. C. M. KNIGHT.

ANTHONY'S
Photographic Bulletin.

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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JANUARY 11, 1887.

(*Continued.*)

IF black spots appear on finished picture the liberal use of a dust brush upon plate, inside camera and dark room will usually overcome the defect.

A circular, well defined white spot after development, which fixes a clear black (the color of plate), is caused by minute air bells adhering to film during the development. Look for these when the developer is flowed over the plate, and touch as they appear with the tip of the finger. A gray irregular surface marking, like those appearing on the wet plates of careless operators, or with disordered silver bath, neutral developer, etc., is caused by some contamination of developer. It may be removed while wet by rubbing with a tuft of cotton. The remedy is to wet the plate thoroughly before applying the developer, but if this is done it must be borne in mind that the development will be prolonged.

A yellow color of image after drying is due to over-exposure with excess of pyro and too rapid development; but more frequently by an insufficient washing after fixing.

The employment of too much heat and unsuitable varnish will also give a yellow tinge to the picture.

In view work a smaller quantity of pyro than for portraits in generally preferable.

Before the gas lights were turned on, Mr. Beach exhibited the Vergara holder to several members, drawing the slides and exposing to view the Woodbury tissue, showing the way it is held in the holder. He said, in substance, that he had just received this slide from London; that it was like an ordinary English plate holder, with their folding slides, but very much thinner. The central septum, which supported the paper, was a close imitation of the central septum to be seen in the Anthony patent holder, except that Vergara's septum was much thicker in order to hold the paper out in the plane of the glass plate.

Now the simplicity in fitting the paper in is very nice. There is a central part, or septum, and the paper lays on each side; the paper in fact is double, like the letter V, being ten inches long, five inches for each side. It is creased, and you simply slide it over the septum, one leaf going on each side, and then push the septum with the tissue attached right into the open end of the holder. [The septum was then pushed in.] The holder is nicely numbered, but is of such an odd size that it will not fit any American camera.

Then the package containing the tissue was shown. The card box holding it was inclosed in a water-proof paper envelope. They also put on the date so you can tell how old it is, a very commendable feature.

The recess now terminated, and the gas was turned up. The President showed prints made from each side of the tissue negative, simply to prove that it is well adapted as a reversed negative, when desired, for photo-mechanical printing purposes.

Dr. PIFFARD—I received some of that tissue about two months ago. It came in a white pasteboard box, the cover being held on by gum elastic. I saw one box opened, the party supposing that the tissue was protected inside, but found it was not. That box was spoiled. I opened a box, and I found it surrounded by a single layer of white tissue paper. The layers were folded one on another, and in removing the film from the one beneath, sometimes a part of one film would stick on to the next. That occurred several times. The two film surfaces seemed more adherent to each other than they did to the tissue support underneath, and half a dozen which I exposed I could not develop decently, and it struck me that it was rather an outrage for the Woodbury Company to send out tissue in that condition. I have some of it upstairs, and would be very glad to exhibit it.

The *President*—I have a sample of that same tissue which you speak of, which I intended to show in order to prove that considerable improvement has been made since that time. Were those sheets you spoke of double or single sheets?

Dr. PIFFARD—Double. I have no objection to bringing mine down, because I don't think it would hurt it to expose it. It might do good in exposing the Woodbury people in sending out such stuff.

The *President*—There certainly seems to be an improvement. The only point which I have observed is that if you handle it too much with your fingers the film will work loose from the surface of the tissue itself, and especially where you cut it with the scissors.

Mr. NEWTON—The tissue appeared to me to be simply paper coated with some gum resin. The emulsion of course is a watery substance, and you cannot readily make a watery substance stick to a resiny substance.

The *President*—We have an interesting paper on "Development in the Field" from Mr. W. E. Partridge, which the Secretary will please read. [See page 47.]

A MEMBER—Is this tissue which you have demonstrated to-night made here, or exported to this country?

The *President*—It is only just imported.

I will ask Dr. Janeway to take the chair while I read a short paper on the "Development of Lantern Slides with Pyro." [See page 49.] At its conclusion The CHAIRMAN (Dr. Janeway), said: The Question Box Committee asks your attention for a short time to-night to several questions and communications. He then read three or four letters as follows, out of which the questions for the consideration of the Question Box Committee arose.

To Question Box Committee.

Having had positive proof that the ruby light of the dark room has permanently injured my eyes, I would respectfully suggest to the committee to have the question of "The light of the dark room and its effect upon the eyes of the operator," brought up for discussion at some future meeting, as thereby members might be benefited to a great extent.

A MEMBER.

NEW YORK, January, 1887.

To Dr. JOHN H. JANEWAY,
Chairman of the Question Box Committee.

MY DEAR DOCTOR,—You may remember that at the last meeting, when I suggested that the light in our dark room was not safe during sunshine, the club met my remarks with incredulity, bordering on ridicule. So I exposed a plate, with the slide half drawn, one foot from the window, and left it for three minutes. Then it was developed and you will find it in my closet, which is open. I should like you to send for it as I shall not be present at the next meeting and again expose it, only this time before the society. As you will see, it is not only fogged but nearly fully exposed. The only trouble about understanding my remarks was that some people do not know what a fogged negative is. Now I think after looking on this picture that they will feel they not only owe me an apology, but should give me a vote of thanks for saving them from a good many spoiled plates.

Yours very truly,
ROBERT B. ROOSEVELT.

NEW YORK, January, 1887.

To the Question Box Committee.

GENTLEMEN,—Why cannot there be some system for making up the developers? In the first place cannot it be settled that the ounce is 480 grains? Then, is it not possible to agree on some amount of water in the solutions? or perhaps it would be better to use saturated solutions. Now we have everything in a muddle, but by this plan we would at least know what we were about, and the public would get the benefit of the labors of the innumerable amateurs.

By Mr. Ripley's formula there are 3 grains of pyro, 9 grains of potash, and 15 grains of sulphite to the ounce of developer, together with bromide and citric acid. He uses 10 ounces of water, which is a convenient proportion, but others employ from 120 down to 5, and make it impossible to understand without difficult calculations how much of the materials are used. Any fixed system would enable us to know what we were doing.

Very truly,
ROBERT B. ROOSEVELT.

Dr. JANEWAY—The questions presented to the committee are as follows:

FIRST.—*The light of the dark room and its effects on the eyes.*

SECOND.—*What other glass may be used with safety besides ruby or orange.*

THIRD.—*Is the light in the society's dark room in the day-time a safe one.*

FOURTH.—*Is it desirable that there should be a uniform system of making up developers?*

FIFTH.—*If so, should an ounce always represent* 480 *grains, the water to represent a uniform quantity; or would it be better to use saturated solutions?*

Dr. JANEWAY—As to the first question, "The light of the dark room and its effects upon the eyes of the operator," I would say: It is a notorious fact that almost every operator's eyes are affected by the ruby light. Some amateurs I know have been compelled to give up photography, which they dearly loved, on account of the effect of the ruby light upon their eyes. It seems particularly to affect certain parts of the retina of the eye, and very frequently brings about a condition of, I might say, condensation of the retina or of the cone parts of the retina. I shall not undertake to enter into the anatomical structure of the retina at present. To my eyes it is a beastly light, and I have tried to get rid of it as best I could. When we look around for another, and see how the great Architect of the universe has distributed his different tints and colors, we find that green is the most pleasing color. I have often wondered why green—or a combination of green—would not be a safe color for the dark room. Any person who has been a long time upon the plains knows there is no pleasure at all to the eye. The eye becomes intolerably tired, and it hails with delight the sight of a small sprig of cotton-wood, or something of that kind, which has a bright green color, and it is perfectly refreshing. Persons on the seashore have a similar experience seeing a white clear sand constantly; their eyes become tired, and if they should strike across a cedar they hail it with delight, and their eyes become rested. Some two years ago a member of the society, a distinguished amateur, Mr. Newton, recommended that the ruby or orange glass should be covered with a green color. He suggested the aniline dye called the "new green," as of great advantage in producing a pleasant light, and at the same time a perfectly safe one. I have coated my developing lantern glass with it. I have yet to have a plate fogged with this combination of tints. We have also the authority of some other writers on the subject. I find in Scovill's Annual two parties who speak of this ruby light. One is Charles Kinderman. He says: "The use of the ruby light for dark-room illumination I have totally renounced, and have adopted in its place a combination of three glasses of chrome green, orange-yellow, and opal white. The light is very agreeable, and not at all injurious to the eye. It is perfectly safe, and causes no fog even by prolonged development." Mr. David Cooper, in the same book, says: "The ruby light is detestable and decidedly unsafe. That the most pleasant, and at the same time as safe a light as is necessary for the most sensitive emulsions, is the orange post-office paper of double thickness. A combination of orange pot glass and green of the cathedral variety, used in moderate quantity, is also safe and pleasant." Several other writers in other books have mentioned this same thing. If there is any trouble with the ruby and orange lights, and one has not the opportunity of combining the green with it, I would suggest that he takes a pair of green glass spectacles, and when the eyes begin to feel tired, put them on, and he will find what a great relief it is to the eye. For myself I think that the combination of the green over the ruby is decidedly safe and decidedly pleasant, and I would like to have Mr. Newton's experience, as he was the first one who suggested it to the society some time before we moved to our new quarters.

Mr. NEWTON—I do not think I can add anything to what has been said in reference to the use of an orange and a green, or the deleterious effects of a ruby light. The action of light is potent, one of the most potent forces in nature. The ruby color acts upon the nervous system—not only upon the eyes, but upon the whole system—and I would say if you inclose a man in a glass case of ruby color, and keep him there, you will make a lunatic of him in about three days. I had occasion many years ago to go through a pretty exhaustive line of experiments upon this question. A gentleman from Bahia, by the name of William Ginsley, brought a paper here, written by a scientist there by the name of Gutzlaf, upon this question, which asseverated the conclusions of Professor Becquerel upon the action of the least frangible rays, that is the orange, the yellow, and the red. A committee was appointed, Professor Tillman, D. C. Chapman, and myself, of which I was chairman. A line of experiments was conducted at my house for the purpose of determining the correctness of Becquerel's theory. The committee determined that actinism was a property of light resident in all rays in the ratio of the wave lengths. Now it is known to any one who has studied color that red and green are complementary colors, and it has been shown to this society just what those two colors would produce. I don't remember the gentleman's name. I presume Mr. Beach remembers.

The *President*—Mr. Hopkins.

Mr. NEWTON—Yes, that is it. It showed just what I claim, that the effect of that combination upon the optic nerve is the same as white light. I could not procure the kind of green that I wanted, and therefore I dissolved aniline in the ordinary negative varnish and obtained the colors I wanted to produce, and exhibited the proper colors of red and green to the society. Cathedral green is not a safe color, besides it obstructs the rays of the light. You want an emerald green. You don't want a blue-green. I will get some of those two colors and bring them here, and then you can see them put together, and hold them up to a light, and see the different effects on a piece of white paper, showing you just what I am talking about, and you will understand it better. There may be some shades of green that don't obstruct the actinic rays at all. The glass should be a yellowish-green and not a blue.

Dr. PIFFARD—As regards the ruby light, I may say I have never been able to appreciate any effect on my health or eyes, and I have used it for pretty long periods of time, an hour and even longer. It seems to me that there is a vast difference in specimens of glass. Some of them are apparently safe, and some of them apparently distinctly unsafe. The red light in the Carbutt lantern upstairs is very unsafe. In using glass in my own lanterns I have always been in the habit of examining the glass through a spectroscope, with a view of seeing how much or how little of the actinic rays came through, and in almost every specimen of red glass you will be able to find more or less rays which are injurious. They can only be detected by a very careful examination. I have never been able to see that they injured my eyes at all, as that glass has not this bright red. It is rather red with a brownish tinge in it. It is what they sell as ruby glass. I would like the evidence of the gentleman who wrote the letter that he had undisputed knowledge that his eyes had been injured by the red light. I am not quite sure but what a good deal of the effects ascribed to this glass are really due to working in deficient light, whatever it may be.

Mr. FRISBIE—In regard to that yellow-green light, I wish to confirm Mr. Newton's statement in regard to the yellow and the green. He spoke of the yellow, and I know Newman & Co. exposed a great many plates close to the light without any apparent effect upon them. In regard to our lights upstairs, the yellow is rather a light yellow, and with only a coating of light green paper; I believe from what I have seen of it, the effect of the glass would not be injurious. I was present at the time an exposure was made on a sensitive plate, and in ten minutes' time that plate was developed, and, if I remember right, I was the one that developed, and that plate was fully timed. I think the plate is still in existence. It was only exposed three minutes. There was a trial made a day or two ago in regard to a green and a yellow light in one of our lanterns, but a mistake was made in placing a bluish-green instead of a yellow-green in the lantern, and the consequence was that in three minutes' exposure beneath the lantern the plate was fully exposed.

The *President*—How far away was the plate?

Mr. FRISBIE—About twelve inches from the lantern. It was lying on top of the tank. If the right colors were used there is no doubt but what the light would be perfectly safe.

Mr. GEORGE H. COOK—I have in my dark room a burner something like that one on the table [an argand ruby gas burner], and I found it a very unsafe light to work by. At the last meeting Mr. Ripley suggested that we get some yellow paper from Denison & Co. I have obtained some of this paper, and it is the nicest and pleasantest light I ever saw. I can see a great deal better than I could before, and it is a much pleasanter light for the eyes. It is a sort of a greenish-yellow. The yellow has just the least tinge of green in it.

Mr. BEACH—I will hold up to the light the plate which Mr. Frisbie spoke of, to illustrate the marked effect which the non-actinic light had on the plate. [Illustrating.] This one, which I will call A, was exposed to the daylight, the sun shining on the supposed non-actinic window, and another plate with three minutes' exposure. It was not forced. An ordinary developer was used. This one, which I will call B, was exposed to the light of the lantern one foot away for three minutes. I will pass them around so you can all see the effect.

Mr. ECKERT, Jr.—In regard to that paper which Mr. Ripley suggested, Mr. Beach has a sample book of it and anybody can see it. It is No. 22, made by the Denison Manufacturing Company.

Mr. GEORGE H. COOK—I had better success with that than I had with the red chimney alone.

The *President*—I will ask Mr. Frisbie if he had the light in the lantern turned up to its full height?

Mr. FRISBIE—Yes, sir.

Mr. WALKER—I think it is about time I put in an appearance. I desire to respond very briefly. My own experience of course is very limited, being very much of an amateur, but I can say that during the season I have only used two or three sheets of post-office paper. You all know the color of it. It is simply yellow wrapping paper, with an orange tinge, and I introduced it between myself and the sunlight. I could see to read a newspaper in my dark room. I used it all summer. When I filled my holders with plates I pulled down the third sheet over the window. Otherwise I only used two sheets between the sunlight and the plates. I developed the plates in that light, and I am not conscious of having fogged a single plate during the summer by reason of the light effects. I have some excellent negatives which I would be very glad to exhibit. If the light was unsafe it may have been unsafe every day in the week while the sun shone, and I was busy constantly. I built the dark room myself, and it was ten feet wide and had no nonsense about it. It was quite as complete as the dark room upstairs, and I think the yellow light which I used was safe. This is either so, or else I have been laboring under such a state of delusion or lunacy as Mr. Newton suggests. I am not mistaken. Such is the fact, and I give it to you for what it is worth. I think that, in view of the discussions and the general feeling among us, it would be a good thing to experiment. We should appoint a committee, a very small committee, of which I may not be one, because you might think me prejudiced; but appoint a competent committee who will investigate this subject right here, on our own ground, and report.

Mr. ROOSEVELT—I desire to say a word in defense of Mr. Walker. This takes the shape of a question which I intended to submit to the committee. It is this: Whether a little fogging is not a benefit to a great many negatives? That opens a new field, it seems to me, for thought. I daresay Mr. Walker's negatives were fogged. For instance, what is intensifying but fogging? You put something on a plate which you call intensifying, which makes it a little thicker all through. Don't you get the same result by fogging your plate? In other words, if you have a thin plate with a short exposure, would not a little fogging make it a much better printed negative than without?

Mr. FRISBIE—If you take two negatives, one perfectly clear, and one a little fogged, the clear negative will give a brilliant result, but the picture taken from the fogged negative would be very flat.

Mr. ROOSEVELT—I mean take a negative that we call weak; I say, would it not be improved by fogging?

Mr. FRISBIE—Hardly; I do not agree with you there.

Mr. NEWTON—The paper Mr. Walker spoke of is the orange-colored paper, and one of the most non-actinic colors which I ever experimented with. I have no doubt his statement is correct, and I would be willing to corroborate it.

Dr. PIFFARD—Instead of printing under a yellow glass, I have found it is better to flow over the back of a weak, thin, over-exposed negative with a colored collodion; either aniline or turmeric answers the purpose. I have found it almost impossible to get a piece of yellow glass that was free and clear of air-bubbles, and I have latterly used the turmeric. Formerly I used the aniline. That will improve the weak parts in a weak negative remarkably, especially over-exposed negatives.

Mr. WALKER—I have not heard that Mr. Roosevelt has ever tried my yellow paper.

Mr. ROOSEVELT—That is what I did try.

Mr. WALKER—Did you carefully shut out the white light around the edges?

Mr. ROOSEVELT—That is unkind. Do you think my son and I would spend two hours and not shut out every possible glimmer? You may be sure that I did not go on spoiling negative after negative without a tremendous struggle. We put on yellow paper under ruby paper, and every kind of paper. I had the entire window covered up, except a little piece about three by four inches, until I could not see whether the negative had developed or not, and yet when I finally produced the negative to white light I found it was fogged.

Mr. WALKER—I guess your plate was fogged.

Dr. JANEWAY—I think the suggestion of Mr. Walker is a very good one, that the President appoint a special committee to test the different colors, and ascertain which is the safest in effect, safest to the eye, and the pleasantest to the operator. My idea of a dark room is that you shall have plenty of light, so that you will not put your fingers into the wrong bottle. You need plenty of light and a safe light.

Mr. WALKER—I have one thing more. In

connection with the subject of the appointment of a committee to undertake this task, I would say that it is generally understood that the difficulty of fogging of a plate occurs between the taking of it out of the holder and the immersion of it into the developer, a period of only a few moments we will say. Let the committee take that into consideration. We do not want a light that is non-actinic for an indefinite period of time. I think it can be very easily ascertained what color it should be. While the committee is experimenting I shall begin now, in the face of what Mr. Roosevelt says, to experiment myself with my yellow paper.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—O. D. P. sends a couple of ferrotypes and writes: Inclosed you will find two pictures made on the argentic dry plates of recent make. I used the formula that is sent with the plates. My camera is a 5 x 8 Novelette and an E. A. view lens. The pictures I send are fair samples of what I have been able to do, and they are certainly not as good as collodion pictures. I would like to know how to go to work to secure better portraits on the argentic plates?

A.—The pictures sent appear to be flat from over-exposure and over-development. We must refer our correspondent to the remarks of Mr. Hoover before the Society of Amateur Photographers of New York, on page 125 of last BULLETIN (February 26th) where he will find a detailed description of the method of working the plates.

Q.—J. F. L. writes: Please give in detail, in the BULLETIN, the preparation mentioned on page 10 of the January 8th number?

A.—Several methods of intensifying are given on the page referred to, and we cannot explain them all here. Will our correspondent state which one he does not understand and we will help him out.

Q.—J. B. L. writes: Will you kindly inform a subscriber, through the BULLETIN, what is the proper quantity of sulphuric acid to add to a pint of saturated solution of pure sulphate of iron to prevent oxidation in making the ferrous oxalate developer. Though I have long since discarded this developer in favor of soda and pyrogallol, I suppose myself obliged to use the oxalate for Anthony's rapid printing paper or Eastman's positive bromide paper. In "How to Make Photographs," one drop of sulphuric acid to each ounce of saturated iron solution is recommended, and Eastman's formula calls for ½ a dram of sulphuric acid to the quart of solution. I have used 10 drops of acid to each pint of saturated solution with fair results; but I am in doubt whether this is too much or too little.

A.—The quantity of acid necessary to retard oxidation is not important, and we think the quantity recommended in the Eastman formula about right, ½ a dram to the quart of saturated solution.

Q.—L. K. O. writes: Please give, through the columns of the BULLETIN, the best process for enameling photographs, and oblige a subscriber.

A.—The details of the method are too long for these columns, and we refer our correspondent to page 407 of the "Silver Sunbeam," where a full explanation is given. The book is issued by our publishers.

Q.—H. B. writes: Please let me know the best way to fix the screens to my side and skylights, and whether to use white or blue goods. Also give a formula for collodion for gem work.

A.—Attach the screens to spring rollers if possible and use white goods. If rollers cannot be used, have a double row of small rings sewed to the screens about 6 inches apart and run a string through the rings to draw the screens into folds. A collodion for gem work can be made with 10 ounces of plain collodion to which is added 40 grains of iodide of ammonium, 20 grains of iodide of cadmium, and 20 grains of bromide of cadmium.

Q.—P. H. H. writes: Please inform me, through the columns of the BULLETIN, if there is any Tapioca paper to be had in the market and where it is sold.

A.—Our publishers inform us that they were the original makers of the paper, and can supply you with it.

Q.—H. E. E. writes: Will you please inform me, through the BULLETIN, what is the cause of vignettes turning yellow around the outside, like those in package which I send accompanying this. The inclosed pictures are all printed from paper silvered on the same bath and at the same time. You will notice that the one that was tinted slightly does not show the yellow hardly any, as does also the one printed plain. Of the unmounted prints, No. 2 was toned very much longer than No. 1, but more or less toning will not remedy the evil. I have been troubled in this way for some time, and thinking it was in my printing bath, I made up a new one and it gave me exactly the same results. The bath is 60 grains of silver to every ounce of water with ½ dram of ammonia and ½ ounce of alcohol. Paper, N. P. A. Pensé, floated two minutes, fumed thirty-five minutes, with the cup containing ammonia set in warm water (paper was put between blotters after floating on bath). The prints generally look very nice until in the toning bath, when the trouble sometimes shows slightly, but most generally it does not show until they are put in the fixing bath, when they change to yellow and remain so. For toning I use chloride of gold with enough saturated solution bicarbonate of soda to neutralize, then add water with a little salt. Fixing bath 1 ounce hypo to 7 ounces water with a few drops of bicarbonate of soda or ammonia. Please give me your opinion of the cause and a remedy for the trouble, and greatly oblige.

A.—We have carefully examined the prints sent, and are at a loss to give a cause for the trouble; but we are inclined to believe that the source of the color is in some way connected with the ammonia. Try another sample of liquor ammonia and let us know the result.

Views Caught with the Drop Shutter.

A. J. Davison, of Hartford, Conn., sends us a unique business card, which is a photograph of a composition picture of owls. On the branch of a tree and near the trunk is an owl photographer behind a Novel Camera, and upon the other end of the branch are two other owls posing. The injunction "Look pleasant! Now, ready!" is followed by the expression "Owl right." The whole affair is well done and quite attractive as an advertisement.

G. M. Carlisle, the well-known Treasurer of the Photographers' Association of America, has been studying medicine for several years, and will soon graduate as M.D. from a Boston College. His photographic studio at Providence will be conducted by his son.

A branch of the Blair Camera Company is now open at 819 Arch street, Philadelphia, and in charge of Mr. George J. Wolf, formerly of Wolf & Cheyney.

The I. C. Dry Plate Company, of Iowa City, recently made an assignment for the benefit of their creditors. It is proposed to continue the works upon a co-operative plan.

After the recent meeting of the Photographic Merchants' Board of Trade in Chicago, the following gentlemen had a banquet together, due to the generosity of Mr. G. Cramer, of St. Louis. J. C. Somerville. H. A. Hyatt, T. W. Pattison, J. B. Pelfrift, L. M. Prince, G. A. Ayres, H. Q. Sargent, G. R. Angel, D. K. Cady, David Tucker, L. F. Hammer, George Murphy, R. B. Mullett, John Carbutt, and I. B. Sessions. Mr. Gayton A. Douglass presented Mr. D. K. Cady, the popular Secretary of the Board, with a sum of money which was subscribed for the purpose.

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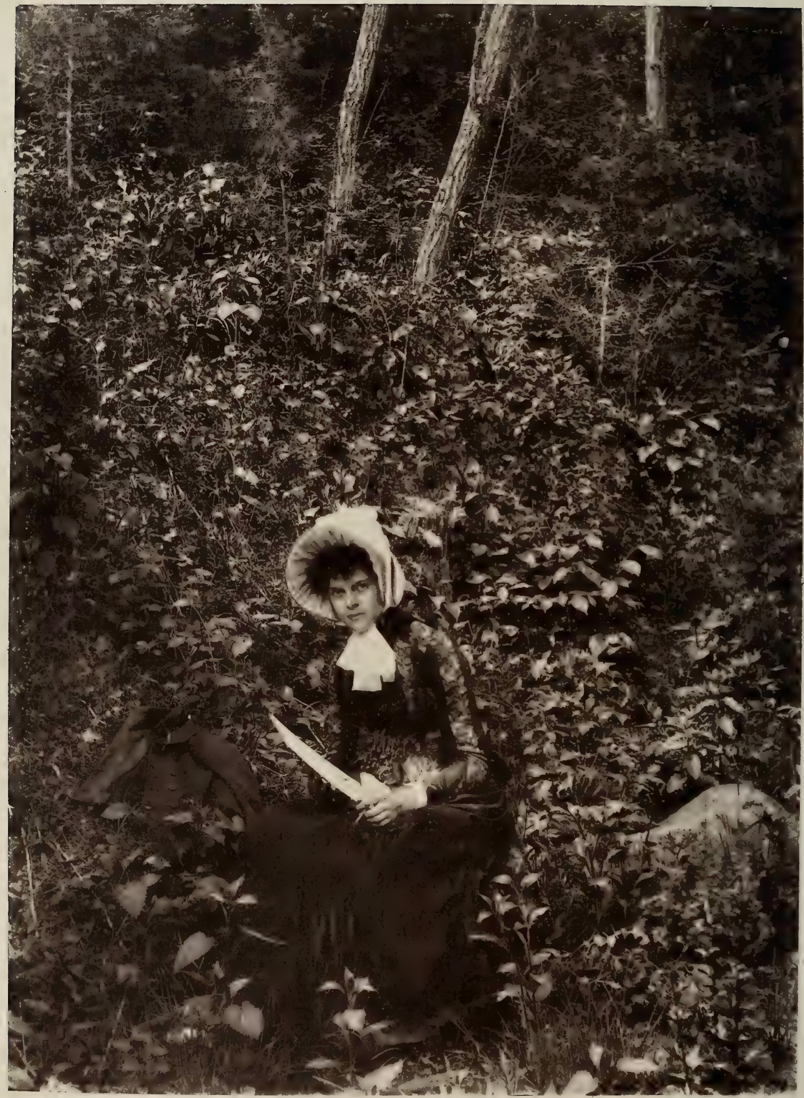
Evening Post Job Print N. Y.



Negative on
Stanley Plate with
Dallmeyer W. A.
Rect. Lens.

Indotint Process
Am. Photo-L. Co.

WELCOMING AN INTRUDER.

BY

PROF. E. L. FRENCH,

AURORA, N. Y.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MARCH 26, 1887. Vol. XVIII.—No. 6.

TONING WITH PLATINUM.

Much discussion has recently been going on in the English journals on the sulphuration of platinum prints, and the consequent deterioration of them during the lapse of time from the gases and emanations of manufactories and other sources in large cities. Now there is no more permanent metal known to the chemist than platinum. In the metallic state, the one in which it exists in the platinum print, it will not unite with any single known acid, neither will any substance attack it except fused caustic potassa. It is obvious that the latter treatment would destroy the paper support as well as the platinum image, and is therefore not worth consideration. The so-called deterioration of platinum prints is due rather to a deterioration of the paper upon which they are made than to any other cause, which deterioration is aggravated by the process to which they are submitted. The washing of the prints in dilute hydrochloric acid has a tendency to cause them to become yellow after drying and as time goes on this yellowness increases. One of the English experimenters did something still worse than this; he submitted the prints to the action of sulphureted hydrogen, and they became decidedly yellow. This was undoubtedly due to the conversion of the sulphureted hydrogen into sulphuric acid in the pores of the paper, and on drying the incipient charring of the latter caused a yellow discoloration. Sulphureted hydrogen does not affect platinum except in solution.

In spite of all that can be said to the contrary, we are satisfied that metallic platinum is the most permanent material with which to make photographic pictures, and we are always interested in any method that will facilitate the production of such pictures. A thorough elimination of the hydrochloric acid used for washing, with some method of neutralizing any possible traces that may remain, is the surest way to prevent the deterioration of the paper on which the prints are made. And now a few words upon a new development of platinum picture-making.

In a recent number of *Le Moniteur de la Photographie*, M. Leon Vidal gives a method of converting the silver image into a platinum one, thus obtaining a platinotype. The process is conducted upon the developed bromide prints on gelatino-bromide paper. After the image is fully developed and has been well washed in an acetic acid bath, it is immersed in a bath prepared as follows :

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Platinum tetrachloride	1 gram.
Hydrochloric acid (pure)	20 to 30 grams.
Water	2 liters.*

The prints should remain in the bath twenty to thirty minutes. They will lose something in density, and should therefore be made more vigorous originally than when they are to be toned and fixed as usual. To make sure that the platinum bath has acted, cut an edge from the print and place it in a bath of cupric chloride of 12 per cent. strength. If the proof is persistent the image is converted into platinum, or is only a little reduced just before complete conversion. If an image has been reduced in the copper chloride bath, it may be redeveloped after thorough washing in water, by the usual ferrous oxalate developer. The reconversion is very complete and with a tone still more brilliant than the original had before the normal development. The action of the platinum modifies the tone of the image, giving one of a marked blue-black color.

After fixing and the last washing, it is best to place the prints for about ten minutes in a solution of alum of about five per cent. strength. The gelatine is thus hardened and is much less susceptible of change from the humidity of the atmosphere.

The process given above is very ingenious and from a chemical point of view there is nothing to prevent its successful execution. Pictures in platinum produced in this manner appear to us to be more readily obtainable than by the usual platinotype process, and if the results obtained are in any way comparable in softness and beauty of tone, there is a wide field of usefulness for the new suggestion of M. Vidal. One other point is important in the application of this platinizing process, that is the power of readily reducing images that are too intense. This may be accomplished by interrupting the process of conversion into platinum when the image is only partly changed. Thus, suppose that a very intense picture is immersed in the platinum chloride solution; after a short time it may be removed and then treated with the cupric chloride bath. Its appearance after treatment in this bath will give an idea of the progress of the change of the image into metallic platinum, for the cupric chloride will not alter the platinum deposited, while it converts the silver that may remain into silver chloride, which is white. As soon as the desired quantity of platinum is deposited, the print is treated in the cupric chloride bath, and, after thorough washing, the unnecessary silver chloride is dissolved away in a bath of hyposulphite of soda. The control of the picture in this process appears to be perfect, for, should the image in the cupric chloride bath appear too weak, the original picture can be restored by development with ferrous oxalate as mentioned above, and a second treatment in the platinum bath can be resorted to to make the change from silver into platinum more complete. In fact the conversion can be carried to any desired phase of density in metallic platinum.

We have not yet had an opportunity to test this process, but hasten to let our readers know the mode of procedure in what appears to us to be a marked advance in the production of permanent prints. Should any of our experimental friends try the method we shall be glad to hear from them.

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All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

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* 1 gram = 15½ grains. 20 to 30 grams = 1 fluid ounce. 2 liters = 70½ fluid ounces.

EDITORIAL NOTES.

THE great event in photographic circles in New York is the joint exhibition of the societies of Boston, Philadelphia and this city. This opens on March 26th, at Ortgies Gallery, 845 Broadway, New York, when a private view will be given to the members and their friends. From all we can learn this will be the largest and best exhibition of the kind ever held in the United States, and as both professional and amateur photographers will exhibit proofs of their skill, we can assure our friends that a visit to the hall will be a source of pleasure and profit to them. The exhibition will close Saturday afternoon, April 2d, being open day and evening for one week. Tickets can be obtained of the Committee: C. W. Canfield, F. C. Beach, John T. Granger, at 122 West 36th street, New York.

THE first Italian exhibition of photography well be held in May next at Florence. There is an International Section, and N. Nobili, 33 Via S. Gallo, Florence, is President of the Executive Committee.

WE are indebted to Dr. J. M. Eder for a copy of the *Jahrbuch fur Photographie und Reproductionstechnick* for 1887. As might be expected from such an authority as Dr. Eder, this is one of the best year books we have seen, and we strongly recommend our German reading subscribers to get one. 384 pages are packed with useful formulas, tables, and capital articles from the pens of the best writers in Germany. Dr. Eder also sends us a couple of his valuable papers read before the Royal Academy of Natural Sciences. For all these kind remembrances we tender our best thanks.

AMATEUR PHOTOGRAPHY has taken such firm root in Germany that Ed. Liesegang, of Dusseldorf, has begun the publication of a journal devoted to amateur photographic interests. *Der Amateur Photograph* is the name of the publication; it is published monthly, and is well filled with interesting material.

THE Springfield Camera Club recently held a most profitable and enjoyable meeting at the residence of Lewis J. Powers, Jr. Herbert Aldrich, who sails soon from San Francisco on the whaler Young Phœnix, for the Behring and Arctic seas, was present with his detective camera that he is to take with him. He goes on the expedition to obtain material for a book which he will illustrate, and also stories for various magazines. The club "voted in" Mr. Aldrich as an honorary member, an honor which he accepted with pleasing remarks. Mr. Aldrich will return in the fall.

THE Montreal Amateur Photographic Club meets every Monday and Friday evening at McGill College Avenue. The officers are: *President* (not decided); *Vice-President*, S. S. Hall, Jr., M.P.; *Secretary and Treasurer*, J. W. Davis; *Committee:* R. F. Smith, F. G. Gnaedinger, H. J. Dean, R. M. Hannaford.

OUR readers should not forget the Chicago Convention in August next, and prepare their exhibits at an early date. There is much active work now going on for the exhibition.

GHOSTS.

To the Editors of the BULLETIN.

I HAVE received, through kindness of Dr. Chandler, the letter and prints sent in response to my inquiry regarding cause of ghosts under certain circumstances, and although it gives no reason for the trouble, it seems to agree with me that it is mainly due to over-exposure. I wish that others would test towards this end.

I was using a single achromatic lens for views, and giving correct exposure, and the illumination was simply perfect. With the same lens, camera and holder I afterward made some photos of cabinet ware, and which were some distance from the window. The day was dull and cloudy, and in fact the rain did descend before I had finished. I made six negatives consecutively, increasing the time of exposure as the light weakened, ranging from two minutes for first negative to six minutes for the last, and every negative shows a decided ghost of same size and in same position on the plate. No light was reflected in the lens, and the position was such that all the light came on the rear of the camera box, and by no possibility could any have reached the diaphragm.

My case is not an isolated one, as some of my friends have had the same trouble at times, but not always. If it was produced by any defect in the lens it should show in every negative. I shall have a mounting made for my lens that will admit of placing the diaphragm nearer to or further from the lens, to test the varied results by moving it on different negatives and see if this will throw any light on the subject.

Like the party on Long Island, I have never had it with a double combination lens and have tried almost every style that has been on the market in this country. If it is confined to single achromatic lenses, there must be a reason, and if the why and wherefore can be discovered, there is probably a way to correct it, even in over-exposure. Yours truly, INQUIRER.

P. S.—I am much obliged to your Long Island friend who offers to send his lens from the No. 2 B outfit for my tests, and will gladly try it in every way to see if I can produce the results shown by him, as well as discover, if possible, the reasons.

COMPOSITION IN PHOTOGRAPHIC PICTURES.

To the Editors of the BULLETIN.

IN the BULLETIN of February 12, 1887, I notice an article by J. Wells Champney on "Composition in Photographic Pictures." I am much interested in Mr. Champney's criticisms, but I do not agree with him as to cutting off the top of the pictures.

When I first saw the slide with the trees and water, I noticed how imperfect the tops of the trees were, but when I noticed the second picture with the trees all cut off at an even height, I did not think it any improvement. The picture does not look complete, something is lacking. The outline of the trees against the sky which you expect, is cut off; the line of the tops of the trees which balance so nicely the waves along the shore, is destroyed. The sky, which should be an important element in a scene like this, is crowded out, all but a little corner, which reminds us of the "Last of the Mohicans."

Mr. Champney says the silhouetting of the trees against the sky proves a disturbing element to him, the beauty of the waves being interfered with.

I am aware that two objects of equal importance should not be in one picture. But it seems to me that we should have a sky in a scene like this, even at the risk of detracting from the water, for the absence of the sky at once attracts our attention and makes us feel that the picture was taken under some disadvantage, which is a "disturbing element."

Mr. Champney further says, "If it is cut off in that way you see how quickly the eye goes to that which seems to make the picture worth taking."

It seems to me our lantern slides are so small that we should not seek to cut them down to make the objects more prominent, but should so manage as to get the eye to go to the principal object without "cutting off" the sky.

If I were to doctor the slide I would stop out (in the negative) a little of the tops of the three large and the two last trees with Indian ink. This would make a space between the tallest tree and the mat so no one would wonder how much taller that tree was, and the other trees would be very much improved by this pruning. It is wonderful how we can improve trees by stopping out objectionable features.

Now as to the slide with a tent, lake, etc.

It seems to me a good slide cannot be made of it as long as the large tree is so near the center of the picture. The tent cuts off the outline of the bottom of the tree and the dry stump to the right is almost an exact repetition of the right line of the tent. Now, by cutting off the top you get rid of an "element of ugliness," viz., repetition of the outline of the tent; but it seems like jumping from the frying-pan into the fire. Your picture has lost in grandeur; it seems low and cramped, the distant mountain looks too near. Your beautiful hill line runs up to the top instead of the side. Your tree runs up large and suddenly—we are left to imagine and speculate as to its probable height; the cutting off of the hill has led to the same thoughts, both of which are avoided when shown. If I were to doctor the slide I should feel like getting rid of that tree, it is beautiful in itself, but out of place here. I admit Mr. Champney is right in saying the black mass of the trunk gives value to the scene, but I would block out the whole tree to the sky line of the hill and then take a fine cloud transparency suitable to the landscape and use it as a covering glass for the slide.

I am glad to see so many interested in lantern slides. I think they are the most beautiful productions in all the realms of science. Ray A. Clarke.

PERSONAL.

To the Editors of the Bulletin.

I notice in Bulletin, in report of proceedings of the Society of Amateur Photographers of New York, some statements made by Mr. Hoover in regard to cyanide, to which I take exceptions.

While Mr. Hoover may be able to handle cyanide with no fear of results of a dangerous character, yet there will be hundreds who will read the report who will try it only to find poison, injury to health, and some may find death.

I was obliged to leave a prosperous business on account of cyanide poisoning, and barely escaped with my life. Confined for weeks in a dark room, losing every nail from my fingers, I can realize in a slight degree at least the danger in the use of cyanide, and what fearful results may occur from such statements as are made in that report.

In all my photographic readings I have never noticed such a statement of the use of any dangerous poison recommended in such a free and easy manner, and I consider it my duty to caution all who are not acquainted with the effects of cyanide to let it alone, and the experience of many old artists will corroborate all I have written.

I am using dry plates in my business, and consider myself one of the craft and entitled to a hearing. Respectfully, J. S. Masseck.

Grand Rapids, Mich.

A PLEA FOR OLD DEVELOPER.

FROM A ONE-HORSE PHOTOGRAPHER.

We who read the journals devoted to our business, often find articles from those who stand high in the art, and from specialists in the various lines; and the idea came to me that a few hints from one who is engaged in running a one-horse concern might be of benefit to some one who is situated in the same way. I call mine a one-horse gallery, because there is literally but one to do the work.

From pumping the water by the pailful, all the way through reception-room, posing, exposing, developing, retouching, printing and toning, spotting and burnishing, there is but one pair of hands to do it all. This has been going on in this same town for the past seventeen years, and during that time there has been many ups and downs—but always bread and butter.

Situated so that I see very few other photographic workers, I get very great help from the different journals, but most of all from the Bulletin, which I have read and preserved since it was one year old. I have seen nothing to emphasize the value of old developer in anything I have read; and as I am convinced both as to its very great usefulness, as well as its economy, I want to call the attention of others to it. Kept in a well-stoppered full bottle it will retain some, if not most, of its usefulness for a week at least this time of year.

My plan is to have two dishes, one with the old developer, one with the new. If I know a plate to be fully timed, a mixture of the old and new gives perfect control. Or one can start the plate with new, and if it comes up too quickly, change into the dish containing the old. I believe in a good long exposure, nearly double, I think, what is usually called enough. The advantages of old developer over bromide with such exposures (for a restrainer) are very many in my way of thinking. A full exposure makes developing a positive pleasure; makes nearly or quite one-half less retouching, and certainly a great difference in the ease of printing, besides giving a print that will take almost any tone. Of course one can spoil such a negative very easily. A good way is to mix the developer in equal parts according to formula; flow the plate, and then, when you find the image coming up too quickly, set your dish down and hurry to pour out the bromide and mix it with the developer, and by the time you get it on 'your plate—Lo! it is too late. The amount of ingenuity displayed by various writers in our journals and almanacs in ringing the changes on different developers, and on the way to light our dark rooms, is, to say the lesat, amusing, and worthy of a better cause. Of what use is such hair-splitting over the weights of the ingredients in a developer, so long as the conditions under which it is to be used are constantly changing. Each new sitter brings to the photographer a new problem to solve. With the light always changing; the complexion, color of hair, and other details different; and the difference in exposure and lighting, what need is there to be so exact in the details and make-up of the developer? So long as one has a good developer, or rather the materials to make a good developer, ought they not to be changed to suit the changed conditions?

I am sure one will get far better results with even a second or third-rate developer if he will but stick to it and intelligently watch its working and changes under different conditions, than he can with any of the very best kind, if he is continually changing from one kind to another, or changing its make-up to try each new wrinkle he sees in print or hears from his friends. The same idea applies to plates with, I think, even greater force. I have used a good many kinds, and find them very much like the ladies—all good and all different in some way. As no one lens will do all kinds of work well, so no one plate has all the best qualities.

I see different writers in the British Year Books are mourning the loss of something the collodion process used to give them that the dry plates do not. I inclose two or three cabinets, and I think I can safely defy any "one-horse gallery," with such apparatus as most of us are obliged to use, to produce anything to equal them by the old process. I have no patience with the talk some indulge in about loss of "bloom and vigor and an indescribable something" that made the old process better in some respects than the new.

But, Mr. Editor, I am afraid your patience may have given out before reading this far, and, for fear of the waste basket, I will stop for this time, and hope that some one who has never tried what old and new developer will do will be induced to do so.

[The cabinets sent are very good.—Eds.]

METHOD OF MAKING GOLD CHLORIDE.

BY J. B. HEYL.

Put a half sovereign or a $2.50 piece in a small evaporating dish, using one two or three sizes larger as a water-bath, and pour on it half a dram of nitric acid mixed with two and a half drams of hydrochloric acid and three drams of water; digest at a gentle heat, but do not boil the acid, or much of the chlorine will be driven off in the form of gas. At the expiration of a few hours add fresh nitro-hydrochloric acid in quantity the same as at first, which may be sufficient, if not repeat the process a third time. Observe that if any silver be present in the gold coin it will produce a flocculent deposit of chloride of silver, thus preventing the solution from being complete. I have found coins with platinum in them, which remains at the bottom, and is easily separated by pouring off the chloride of gold after it is dissolved. Next dilute largely with distilled water, and add a filtered aqueous solution of common sulphate of iron (six parts to one of gold); collect the precipitated gold, which is now free from copper; redissolve in aqua regia as at first, and evaporate to dryness.

The weight of a half sovereign is about sixty-one grains, of which fifty-six grains are pure gold. This is equivalent to eighty-six grains of chloride of gold, which will be the quantity contained in the solution.

The most convenient mode of keeping the chloride is in aqueous solution—one grain to the dram of water, I have used the above for years.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

SINCE these papers began to appear in the BULLETIN, I have received several letters from American photographers inquiring as to how they could obtain the various books mentioned in my lists, more especially such as are now "out of print." I shall be very glad to aid either individuals, societies, or libraries in this matter. For the last ten or fifteen years I have bought scientific books largely, both on my own account and for various public institutions with which I have been connected, so that I regularly receive the catalogues of the British booksellers (a host in number). As I always scan these catalogues closely to complete my own collection of books on photography, I meet with many books of which I already possess a copy, but which I should be pleased to secure for any American friends. I would again urge on all photographic societies that it is their duty to form and maintain a complete collection of books bearing on the history and science of the art which each society is founded to promote.

Continuing my list of authors, we next come to

THOMAS GREENISH.

1861. "A List of Photographic Apparatus and Materials; to which is added Ample Directions for Use, and Instructions for Amateurs."

AMEDEE GUILLEMIN.

1876. "The Applications of the Physical Forces." Translated from the French by Mrs. Lockyer, and edited by Norman Lockyer, F.R.S. 4to. Illustrated. (Photography, pp. 289–328). Macmillan & Co. 21s. The illustrations, like those in most French books of science, are remarkably good.

SIR W. R. GROVE, M.A., F.R.S., one of the Judges of the Court of Common Pleas, appeared in early life more likely to make his mark as a scientist than as a lawyer. Every electrician knows "Grove's Cell," and forty or fifty years ago Mr. Grove was an active experimenter in almost every department of physics.

1874. "The Correlation of the Physical Forces; with other Contributions to Science." Sixth edition. 8vo. pp. xviii and 466. Illustrated. Longmans. 15s. This book contains (pp. 241–247) "A Voltaic Process for Etching Daguerreotypes," and (p. 436) a note on "Natural Photography." The first edition was published in 1846 by S. Highley. 52 pp. price 2s. 6d.

Second edition, 1850, and third, 1855.

In this fine book, Grove proves conclusively that force, like matter, is indestructible, and that when one form of energy disappears, a precisely equal quantity of some other form is evoked.

1842. "A Lecture on the Progress of Physical Science since the Opening of the London Institution," delivered January 19, 1842. 8vo. 46 pp. In this pamphlet, which was printed for private circulation only, Mr. Grove, the Professor of Experimental Philosophy, makes the following remarkable prophecy, every line of which has since been justified: "It would be vain to attempt specifically to predict what may be the effect of photography on future generations. A process by which the most transient actions are rendered permanent; by which facts write their annals in a language that can never become obsolete; forming documents which prove themselves—must interweave itself not only with science, but with history and legislature."

Dr. G. C. Hermann Halleur was Director of the Royal Technical School at Bochum, in Germany. The German edition of his book appeared in 1853, and it was almost immediately translated into English.

1854. "The Art of Photography: Instruction in the Art of Producing Photographic Pictures in any Color, and on any Material, for the Use of Beginners, and of Engravers on Copper, Stone, Wood, etc. With Practical Hints on the locale best suited for Photographic Operations and on the proper Posture, Attitude, and Dress for Portraiture, by F. Schubert, painter. And an Appendix containing Brief Explanations of the Chemical Terms which occasionally occur in the work." Translated from the German by G. L. Strauss, Ph.D. 12mo. 108 pp. 10 woodcuts. J. Weale, 59 High Holborn. 1s. This book was volume 79* of "Weale's Elementary Series." A second edition was published in 1856.

T. Frederick Hardwich was an earnest worker at photography between 1852 and 1860. Until the latter year he held the position of Lecturer on Photography at King's College, London. Resigning this post he became a clergyman of the Church of England, and has ever since labored diligently in that sphere in the North of England. Of late years Mr. Hardwich has once more come to the front as an authority on all matters connected with the optical lantern. His book is so well known to all workers in our art throughout the world that it has somewhat irreverently been dubbed the "Photographers' Bible."

1855. "A Manual of Photographic Chemistry, including the Practice of the Collodion Process. Part I, The Science of Photography. Part II, Practical Details of the Collodion Process. Part III, Outlines of General Chemistry." 12mo. 384 pp. Illustrated. John Churchill, New Burlington street.

Second edition, 1855. 344 pp. 6s. 6d.

Third edition, 1856. 390 pp.

Fourth edition, 1857. 390 pp.

Fifth edition, 1859. 516 pp. 7s. 6d.

Sixth edition, 1861. pp. xvi and 571. 7s. 6d.

Seventh edition. Edited by George Dawson and E. Hadow, 1863. 594 pp. 7s. 6d.

Eighth edition, published as "A Manual of Photography, founded on Hardwich's Photographic Chemistry, by George Dawson." 5s. 6d.

Ninth edition, 1883. Edited by J. Traill Taylor. Foolscap 8vo. 464 pp. 57 wood-cuts. J. & A. Churchill. 7s. 6d.

It will be seen that the book has passed through the hands of several editors, so that in the latest edition there is not much of the original left. Still it remains a useful guide, more especially to the optics and chemistry of photography, and the collodion process.

Ludovico Wolfgang Hart was a Sapper in the Royal Engineers (the scientific corps of the British Army), and was engaged in the Ordnance Map Office, Southampton, where photography was, and is, largely employed in the reproduction of maps, etc.

1857. "Photography Simplified: A Practical Treatise on the Collodion and Albumen Processes." 12mo. pp. viii and 63. 13 plates. Simpkin, Marshall & Co., London, and Marshall & Co., 154 High street, Southampton. 1s.

W. HEIGHAM.
1879. "The Photographic Painter." Richardson. 1s.

J. F. HEATHER, M.A.
1877. "Optical Instruments; including (more especially) Telescopes, Microscopes, and Apparatus for producing Copies of Maps and Plans by Photography." Weale's Series, Vol. 169, enlarged edition, rewritten. Illustrated. C. Lockwood & Co., Ludgate Hill. 1s. 6d. This book includes notes on the stereoscope, magic lantern, camera, etc.

WILLIAM HEIGHWAY.
1876. "Practical Portrait Photography: a Hand-book for the Dark Room, the Sky-light, and the Printing Room." 152 pp. 12mo. Illustrated. Piper & Carter. 1s.

A second edition of this book appeared in 1878. It was originally published in the *Photographic News* for 1875.

1879. "Æsthetics of Photography; being Hints on Posing and Lighting the Sitter." Piper & Carter. 1s.

1879. "Photographic Printer's Assistant." 12mo. 86 pp. Richardson & Best, 5 Queen's Head passage, Paternoster row. 1s.

Second edition, 1881. Third edition, 1884. 86 pp. Piper & Carter. 1s. The later editions are merely reprints of the first one.

1881. "The Hand-book of Photographic Terms." Piper & Carter. 2s. 6d.

CHARLES HEISCH, F.C.S., was a member of the firm of Murray & Heath, Opticians, 43 Piccadilly, and Lecturer on Chemistry, Middlesex Hospital Medical College. In the preface to his book he describes himself as "engaged in the practice of photography since the time that Talbot read his first paper, and astonished people with the production of a copy of a piece of lace."

1863. "Elements of Photography." 12mo. pp. iv and 54. London: Murray & Heath. 1s.

Mr. Heisch was also the author of "Willat's Manuals, No. I, Part 2. Collodion and Albumen Processes. Edited by C. Heisch." Published probably about 1854.

THOMAS H. HENNAH.
1853. "Directions for obtaining both Positive and Negative Pictures upon Glass by means of the Collodion Process, and for Printing from the Negative Glasses on to Paper. Also Gustave le Gray's recently published method of obtaining Black and Violet Colors in the Positive Proofs." Translated from the French. 36 pp. 8vo. Delatouche & Co., Photographic Chemists, 147 Oxford street. 1s.

1854. "The Collodion Process." Second edition. 48 pp. Six woodcuts. G. Knight & Co., Foster lane. 1s.

Third edition, 1855. Fourth edition, 1855. 60 pp. Six woodcuts. New edition, 1857. 8vo. pp xii. and 60. Seven woodcuts. G. Knight. 1s.

Hennah was a professional photographer living at Brighton.

The value of many of these old books is enhanced by the lists of photographic apparatus, chemicals, etc., appended to the work by the dealer who published it. For instance, Hennah's book has at the end a catalogue of photographic materials sold by G. Knight, extending over twenty pages, and giving a valuable insight into the makes and prices which then prevailed.

(*To be continued.*)

[*From Photographische Mittheilungen.*]

THE PHOTOGRAPHY OF STARS FOR DETERMINING DISTANCES.

By Dr. O. Lohse, *of the Potsdam Observatory.*

(Continued.)

The lighting of the rings can best be produced by igniting a small piece of magnesium ribbon; and it is very intense at the beginning. Notwithstanding the decrease of light, the rings remain quite visible to the eye, which is very sensitive in the darkness to weak impressions of light, for over one hour, and during this time most of the observations have been made. There is also no difficulty in a repeated exciting of the rings during observation, as long as their mounting can easily be removed from the ocular case. The advantages of these ring-micrometers consists in the simplicity of their application and in the agreeably faint light of the self-luminous substance, which admits the simultaneous observations of very weak objects in the visual field.

During pointing of the ring-micrometers on the telescope, it appeared that the inner ring of very small diameter was always illuminated less than the outer rings. I found it therefore of advantage to place in the center of the ring systems still another full circle, whose diameter was reduced to 0.18 mm. The rotation machine, mentioned before, enabled me to place a mark of such diminutiveness in an exactly central position. During exposure the star is placed behind this point, where generally a small beam of light, originating from the incomplete achromacy of the objective, remains visible on the circumference of the small circle, and the least displacement of the view point can be observed. The luminous rings are not unnecessary by this arrangement, but they effect the necessary orientations about the position of the small point. I may add that the arrangement as described has proved to be good, and that the star pictures appear as circular spots upon the negative after long exposure.

To control the irregularities of the gelatine film which it possibly may suffer during the chemical preparations, I apply a process which might be well worth mentioning. Upon each plate intended for exposure a net is copied (printed) whose dimensions may be exactly determined by measurement. From an original net a reduced negative is made, showing the dividing lines light upon a dark ground. This is then placed upon the sensitive plate, both film sides together, put into a printing frame, and exposed for a short time. It is of particular importance to apply here parallel light for the sharp formation of the net lines. This can be obtained approximately by exposing the printing frame in a narrow and high space, where the light falls only through an opening from above.

There is still another light source by which the emitted rays can be looked upon at once as parallel—the moon. The lunar light has the proper intensity to execute the printing process in the most simple manner and without any particular arrangements for exposure. If very sensitive plates are used, a few seconds are sufficient to print the net. A large number of plates can therefore be provided in advance at the proper time with the latent image of the net, which has then to go through all the various chemical processes with the copied object, and by comparison with the original net shows all the existing irregularities.

As the fifth line of both co-ordinate directions in the original net should always be a little heavier, showing this mark consequently upon each plate, and as the squares thus formed may be marked with letters, such a printed net will form a welcome aid in measuring a cluster of stars for instance, or a space thickly covered with stars. It is even of advantage to attach the definite measurements of the star prints only to the net lines after the latter have been determined micrometrically, and after the existing irregularities of the gelatine film have been traced by comparison with the original net whose exact dimensions are known. The principal problem of the measurement would therefore extend to a most exact determination of the net printed at the time, but which, on account of the equality of the intervals, is much more simple than a direct measurement of the irregularly scattered star-pictures. The influence of temperature upon such measurements would of course have to be fixed by experiments.

For the marking of the parallel upon the prints, I have recommended, in No. 2560 of the *Astronomical News*, a process to make two more, but separate, views of the clearest stars of the group upon different parts of the plate in such a way that the first view is taken east from the center of the plate. Then the clock-work is stopped and the second view is taken in the west. This process may, under certain circumstances, render difficult the survey of the star group, the added star points changing the constellation. To avoid this, and that the instrument so put up may be reliable, it will be sufficient in nearly all cases to effect the orientation by a neighboring star, which is so clear that, with firmly fixed telescope, its traversing line is impressed upon the sensitive film. The coördinates of the star must be known, and the time of its passage has also to be noted.

The original photographs of accumulations of weak stars obtained at the telescope do not admit obtaining a survey of the constellation without application of a microscope lens, the several stars representing too diminutive dots. I have found it therefore to be of advantage to make an enlargement of each negative, of five to six times its size, with the aid of an optically correct objective, and to mark the star points with Indian ink in the positive picture so obtained, and likewise the lines of the net. In this way it is possible to transfer the whole view, greatly enlarged, upon paper, if the cyanotype process of J. F. Herschel, which is easily managed, is used for copying. Such a print can make no pretension to great exactness, but it offers a convenient means of quickly finding the star system in question, which would require much more time directly at the telescope with weak stars and those close by each other. A paper print produced in this way, serves for notes for instance to designate the stars with letters or numbers, and cannot easily be spared in determining definitely a group of tars.

Concerning the chemical part of the work in the production of the original negatives, I would remark that the bromide of silver gelatine plates used should be examined as to whether they possess the required high sensitiveness, which is done with the aid of a photometric arrangement, photographically known as a sensitometer.*

With regard to sensitiveness, the plates found in the market differ very much.

To counteract the characteristic properties of the bromide of silver of being very insensitive to red and yellow light; or, in other words, to obtain with red stars sufficiently strong images, the plates may be treated with suitable color-solutions, that is, may be changed into orthochromatic plates. With the aid of this process, which I have already applied in 1884 for astro-photographic purposes, we succeed in finding those stars which have an entirely different color from that of the regular star color, which in weak objects can only be determined by the eye with difficulty.

The possibility of modifying the sensitiveness of the bromide of silver in a precise manner by application of different coloring matters, may even help to characterize in a general way the spectra of the stars taken. Yellow sensitive plates offer, besides this, a means of counteracting the influence of weak clouds in the atmosphere of the earth, which are so observable in using ordinary plates in consequence of disproportionate strong absorption of the blue rays. Yellow light being less absorbed, it is not necessary the sky should be free from vapors when using yellow sensitive plates.

I have also used the orthochromatic plates to advantage for double stars with differently colored components. One star rules oftentimes so strong in its photographic action, that during the long time of exposure which is necessary for the other star, it develops an unusually large picture, so that the separation of the objects changes upon the plate. In such cases it is desirable to make a view with as much monochromatic light as possible, which can be done easily by inserting a blue absorbing medium into the radial cone. It is clear that the sharpness of the picture is thus increased, by counteracting the deficient achromatism † of the objective.

Lately the proposition has been made to put plates prepared with luminous paint into the telescope, in place of the photographic plates, and to print pictures from them by contact with dry plates, to avoid in this way the long exposures in the telescope. Aside from the technical difficulties to be overcome, having their cause principally in the coarse-grained condition of the luminous paint, the supposition made that the action of the absorbed light upon the photographic plate might be stronger than the direct influence, may by no means be considered true.

Translated by H. D.

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[*] A uniform system of measurement has not been observed yet in this direction, so that the determinations have only a relative value. I use as light source a benzine flame, whose height is kept constantly at 33 mm. The diameter of the wick is limited by a brass tube to 6 mm. At 628 mm. (2 feet) distance from the light source, the plate to be tested is exposed behind a paper scale of twelve gradations. The latter consist of one to twelve layers of tissue paper. The exposure lasts ten seconds; development, five minutes. Very sensitive plates show No. 12 very distinctly.

[†] By taking views of solar pictures, I have been able to obtain a remarkable improvement of the sharpness of the picture. Solar pictures were produced with yellow and, probably also, violet light, which differed, inasmuch that the latter showed a richness of tone-gradations, while the yellow pictures appeared very monotonous.

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No one interested in photography should be without the BULLETIN, and no progressive artist will part with it after a perusal of one number. The pictures that accompany each number are worth much more than the price.

A. F. WIMS, C. E.

THE CONVERSION OF SILVER RESIDUES INTO NITRATE OF SILVER.

BY F. STOLZE.

I. Working the Haloids of Silver.

The haloids of silver—chloride, iodide, and bromide—come into use either mixed up with other soluble salts, or suspended in gelatine or collodion. If one prefers to apply the method with hyposulphite of soda, and which we urgently advise, all residues can be treated almost equally well by diluting a saturated hyposulphite solution with its own to three times its volume of water, into which the residues are put. In this operation the gelatine emulsion is at first squeezed into shreds, while the collodion emulsion is poured into the hyposulphite in a thin stream with stirring. Too much agitation should be avoided.

If there are any haloid salts in the substance, this is sufficient to dissolve them. When emulsion is worked, the shreds should become transparent. The solution is then poured off, soaked once more in hypo solution, 1 to 5, under repeated stirring for at least half an hour, and this solution is added to the former. The extracted shreds, in which now hardly a trace of silver is left, are thrown away. If the emulsion residues should have already become fully or partly liquefied, they are heated and chrome-alum solution, 1 to 20, is added, until the gelatinizing is restored again. For collodion emulsion five times as much hypo solution should be used as emulsion, and the solution should be allowed to act for about half an hour.

If in such a manner all silver salts have been dissolved in the hyposulphite of soda, pieces of zinc are put into it, which immediately before have been freed of their surface of oxide by plunging them in muriatic acid and then washing. This cleaning process of the zinc is not exactly necessary, but it accelerates the reduction, which otherwise would take place some hours later. Generally it can be calculated that the separation of the silver, if sufficient zinc has been put into the vessel and at different places, has been completed after 48 hours, particularly if stirring every few hours is attended to. A little longer time for this operation will do no harm. The silver will separate as a coarse-grained black powder at the bottom, while part of the precipitate will deposit on the zinc and have to be brushed off. The precipitate is washed by repeated decanting with fresh water, and being heavy, and not so finely divided, this is easy work. In this condition it is mixed with zinc and sulphuric acid; but this is harmless, the following process removing all admixtures.

An important remark has to be made here. The photographer generally has, besides the yet undissolved silver haloids, some already dissolved in hyposulphite of soda. These solutions are, if regularly worked, almost always so little saturated with silver salts, that they will still easily absorb all undissolved silver haloids. The photographer should use therefore at first his old hypo baths, no matter what their concentration may be, as a dissolving agent for the silver haloids, and strengthen the same with fresh hypo in case their dissolving power should not be sufficient. In this manner he will be able, as a rule, to finish the reduction of the haloids without any further expense. Furthermore, the liquid remaining over the black precipitate with zinc still contains some traces of silver. These will separate still more completely if the liquid is heated during reduction with zinc. But we have found that the remaining quantity, particularly if a time of 96 hours, instead of 48 hours, is allowed before decanting, is so sound, that even by treatment with sulphuret of potassium a deposit worth filtering is not obtained. It may therefore be left unnoticed.

The washed residue is now dissolved in nitric acid, which for this purpose is not concentrated, but is mixed with one-half its volume of water. This always leaves a black residue, even if excess of nitric acid is used, which is due partly to contamination of the zinc, partly from chloride of silver, originating from some chloride that may be in the impure nitric acid used, and partly consisting of gold, which therefore should not be thrown away, but treated with nitro-muriatic acid. The impure acid nitrate of silver solution so obtained is now mixed with a saturated solution of good washing soda as long as a white precipitate, consisting of carbonate of silver, will form. The precipitate then contains all the silver, which one can easily convince himself of by acidifying a sample of the mother-liquor with muriatic acid, which should remain clear. The precipitate is now well washed with several changes of distilled water by decanting, and changed by addition of chemically pure nitric acid into nitrate of silver.

To avoid any acid reaction, so much nitric acid is added that a small part of the carbonate of silver remains undissolved. To prevent failure from lack of care, a small quantity of the carbonate of silver (about a fifth of the quantity) may be retained; the nitric acid added to the main quantity until, after effervescence is finished, all appears dissolved. The rest of the carbonate of silver is then added, and, after further effervescence has ceased, diluted nitric acid carefully added until little carbonate of silver remains undissolved at the bottom. The solution is completely pure and absolutely neutral. Diluted to 10 per cent., and weakly acidified with nitric acid, it can be used at once as negative silver bath, and with addition of a little soda solution also as positive silver bath. It is quite useless to reduce it first to crystals by evaporation, as this will not improve it, and make all labor to that effect in vain.

One particular recommendation of this method with hypo is that it admits the simultaneous working of all residues except ashes. If kept separate it is not only the time we lose, but the losses from each process will double. Otherwise the precipitated haloids can easily be reduced by stirring them in water acidified with a little muriatic acid and putting zinc into the solution. The process will also take place without muriatic acid, but much slower. The old hypo baths should then be worked by themselves, and one has extra labor without saving the process with the hypo.

(*To be continued.*)

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[*From the Scientific American.**]

PHOTOGRAPHY OF A MOVING PENDULUM.

We represent in the cut accompanying this article an interesting achievement in photography. It is not only of value in itself as a perfect production of the art, but is very suggestive. It opens the question as to how much movement can be allowed to an object which shall not be detected in the blurring of its image, and also as to the relation between the distance, speed of object, and time for instantaneous exposure in photographing a moving object. Thus the one-hundredth of an inch is a distinctly visible quantity. A movement during the time of exposure which would on the plate produce this amount of displacement would tend to cause a blurr. By one high authority the amount allowable is placed at $\frac{1}{10}$ millimeter, or $\frac{1}{250}$ of an inch. It is uncertain how far this can be accepted as an absolute law. If a moving steamer was photographed so as to be reduced to $\frac{1}{1000}$ of her size, a displacement on the plate of $\frac{1}{250}$ inch would represent on the part of the steamer a movement of $\frac{1000}{250}$ inches, or four inches. At a speed of fifteen miles an hour, this would occupy a period of $\frac{1}{66}$ second. This reduction would represent the City of Rome as a little over six inches long.

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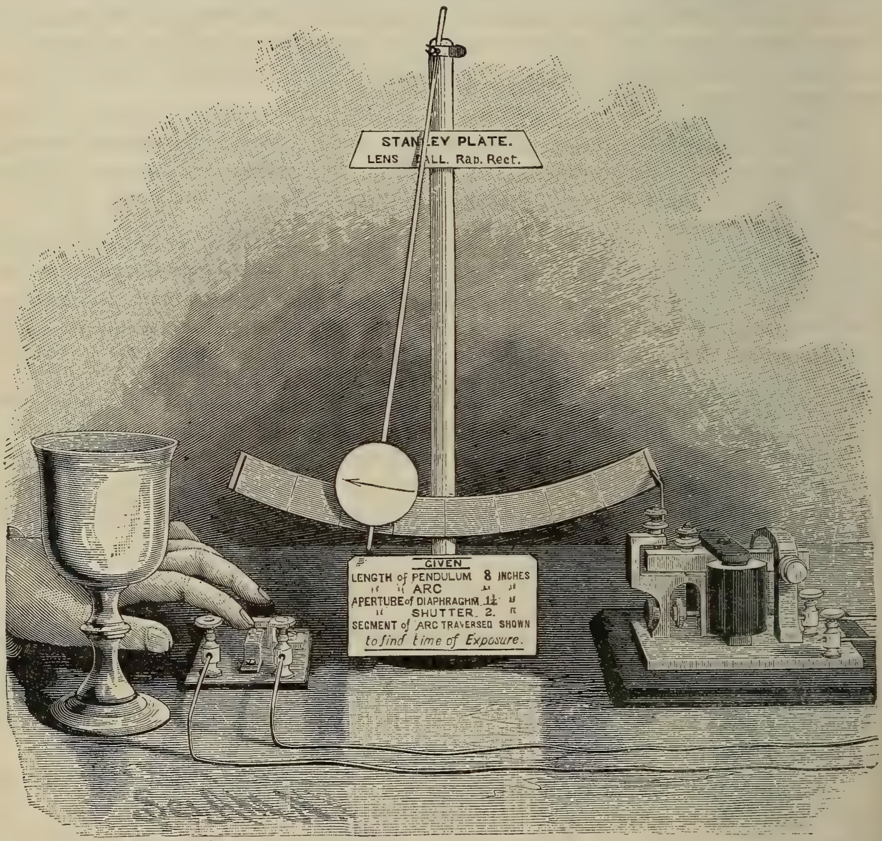
* Reproduced by special permission of the publishers.

In photographs of distant objects there would be a certain difficulty in determining the blur. The grain of the paper would tend to conceal it. When a near object is photographed so as to be reduced to one-half only of its natural size, any displacement in the time of exposure is much more easily detected. It is such subjects that test most rigorously the limitations of the photographic art as affected by the shutter mechanism and sensitiveness of the plate.

The cut represents, almost of full size, a photograph of a swinging pendulum.


STAN EY PLATE.
LENS ALL. Rap. Rect.
GIVEN
LENGTH of PENDULUM 8 INCHES
" " ARC " "
APERTURE of DIAPHRAGM 1½ "
" SHUTTER 2. "
SEGMENT of ARC TRAVERSED SHOWN
to find time of Exposure.

It was taken by Dr. J. J. Higgins, an amateur photographer of this city. The conditions were as follows:

The pendulum was eight inches long as regards the distance from its point of suspension to its center of oscillation. Thus its period for small arcs would be about 0.4 second, and for a longer arc, such as indicated by the divided circle, a very little more. It was held at one extremity of the graduated arc by a catch attached to the telegraphic sounder, so as to be released when a current of electricity was passed through the magnet. In the circuit with the sounder were included a key, a resistance coil, and an electrical detent of similar character to the sounder, for holding and releasing the shutter of the camera. The paper arc was divided into inches, and the general data of the experiment were written on the cards seen attached to the standard. The apparatus was set upon the roof of Dr. Higgins' residence. To make the print a certificate of its own authenticity, a goblet of mercury was placed by the side of the apparatus, and was photographed with it. This proved that the table was level. Otherwise, by inclining the apparatus, the pendulum could be taken by a time exposure in any desired position. At the upper end of the rod two threads were used for suspending the pendulum. This precluded the possibility of the pendulum being mechanically held to one side, as it would be impossible to do this and keep the threads aligned with the rod. The camera was then placed a short distance from the apparatus, focused, the shutter detent arranged, a mirror was placed so as to reflect the sunlight directly upon the pendulum, and all was ready.

A touch of the finger on the key released both shutter and pendulum. The pendulum swung down, passed the lowest point of its arc, consuming very nearly one-fourth of a second in the journey, and just as it was rising on the opposite side was photographed. The sharpness of the image is surprising. Absolutely nothing can be detected to indicate the motion of the pendulum. The length of the pendulum is known; the divisions of the arc can be reduced to degrees, so as to give its angular displacement, and thus we are in possession of the data necessary to arrive at an idea of the time of exposure.

The pendulum in its journey from starting point to the place where it was photographed had spent about one-fourth of a second. It was at this point moving at the rate of 25.8 inches per second. Taking the reduction as one-half, which is not far from the truth, and allowing for a displacement of image on the plate of $\frac{1}{200}$ inch, this would give for time of exposure $\frac{1}{12\cdot9 \times 200}$ second or $\frac{1}{2580}$ second. For Mr. Muybridge's exposures the time of 1.500 of a second has been claimed. Mr. E. J. Marey, who in France has done the most important work of the last few years in photographing moving men and animals, has used a regular exposure period of $\frac{1}{2500}$ second. Dr. Higgins therefore seems to have about reached the same limit, for when the sharpness of the image is considered, it is not easy to admit a greater displacement than that used in the calculation.

Again, it is necessary to distinguish between the efficient period and mechanically opening period of a shutter. Little effect is produced upon the plate until the shutter is partly open, and the light ceases to a great extent to act before the shutter is fully closed. The exposure however was wonderfully short. When the nearness of the object to the camera is taken into account, the perfection of the photograph produced is very remarkable.

THE EXHIBITION OF PHOTOGRAPHS.

The First Annual Exhibition of Photographs opens on Monday, March 28th, at Ortgies' Galleries, 845 Broadway, and will be open daily thereafter from 10 A.M. to 1 P.M. Lantern exhibitions will be given on Monday, Wednesday and Friday evenings during the week, and the exhibition will close at 3 P.M. Saturday, April 2d.

We are informed that there will over 300 separate frames and in the neighborhood of 1,000 photographs, a majority of which are made by amateurs. It will undoubtedly be one of the largest and best photographic exhibitions ever given in this city, and will be worth seeing.

Season tickets may be had of the committee, Messrs. Canfield, Beach and Granger, at 122 West Thirty-sixth street, and as the subscription is very small a large attendance is expected.

◆

The Eastman Dry Plate and Film Company have commenced a suit against E. & H. T. Anthony & Co., to restrain the latter from using, in coating photographic paper, a machine on which the Eastman Company claim a patent. The preliminary hearing is set for April 1st. We understand the suit is not expected to interfere with the sale by E. & H. T. Anthony & Co. of gelatino-bromide paper as heretofore.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

SECRETARY'S REPORT FOR THE YEAR ENDING DECEMBER 30, 1886.

Dr.

1886.				
April	13.	Received from Treasurer		$100 00
July	22.	E. & H. T. Anthony & Co.,	Space	144 00
		J. C. Somerville,	"	72 75
		W. G. Entrekin,	"	72 75
		"	donation	10 00
		H. A. Hyatt,	Space	75 00
		Smith & Pattison,	"	75 00
		Sweet, Wallach & Co.,	"	45 00
		Blair & Prince,	"	42 00
		W. J. Bryant,	"	148 00
		Knapp & Caldwell,	"	78 00
		St. Louis Dry Plate Company,	"	49 50
		L. W. Seavey,	"	89 70
		Allen Brothers,	"	37 50
		A. M. Collins, Sons & Co.,	"	37 50
		G. Cramer,	"	30 00
		Dr. McIntosh,	"	29 40
		W. D. Gatchel,	"	29 40
		Seed Dry Plate Company,	"	56 40
		Eastman Dry Plate and Film Co.,	"	26 25
		Acme Burnisher Company,	"	26 25
		Eagle Dry Plate Company,	"	26 25
		Spurgeon,	"	78 75
		George Murphy,	"	26 25
		Weber & Co.,	"	26 25
		J. E. Newcomb,	"	34 05
		J. Rosenthal,	"	40 00
		Benjamin French & Co.,	"	26 25
		Buchanan, Smedley & Bromley,	"	26 25
		Extra, for	"	40 00
August	14.	Rochester Optical Company,	"	45 00
		C. W. Mallinkrodt,	"	42 00
		H. Lieber & Co.,	"	29 40
October	12.	W. H. Walmsley & Co.,	"	26 25
Dec.	30.	Received from Treasurer		23 50
				$1,765 40

Cr.

1886.			
Jan.	23.	Postage stamps	$1 00
		Letter box	70
"	29.	Postage stamps	1 00
Feb.	19.	"	1 00
		Telegram	25
"	25.	Paper holders	45
March	19.	Twine	20
"	25.	Postage stamps	3 50
		Telegram	25
		"	25
April	7.	Postage stamps	1 00
"	13.	"	1 00
		Printing	54 50
May	2.	Two hundred mailing tubes	5 00
"	11.	Postage stamps	1 00
"	21.	"	1 00
		Express on electros for journals	2 20
June	2.	Engraving diagram	15 00
		Seven electros	8 75
"	18.	Telegram	25
"	26.	Paid G. M. Carlisle	1,485 35
"	28.	" " Entrekin donation	10 00
July	1.	Express on tin box	1 65
"	2.	Postage stamps	1 00
"	15.	Express on official papers	45
August	14.	Paid G. M. Carlisle	116 40
Sep.	1.	Postage stamps	1 00
		Copy of essays	15 00
Oct.	12.	Paid G. M. Carlisle	26 25
Dec.	30.	Drawing of diagram	10 00
			$1,765 40

NOTE.—These columns don't foot up to balance; but they are correct to copy sent us.—EDS.

Due the Association from Hiram J. Thompson, Chicago, $26.25

H. McMICHAEL, *Secretary.*

FORMULAS FOR DEVELOPERS: HOW SHOULD THEY READ?

BY DR. JOHN H. JANEWAY.

[Read before the Society of Amateur Photographers of New York.]

I THINK that the questions we have for discussion to-night are both apt and timely, especially so when we see how flooded the literature of our art science is with the constantly increasing armies of developers.

The tyro is early told by the many writers "to choose out a good developer and stick to it." Sound and good advice, surely. But how is he to pick it out?

It is like taking a young man into a machine-shop and saying to him, here are all the materials required, and all the tools necessary to work with, now go to work and build a locomotive. Does he know the difference between a wrench and a jack screw? So it is with the beginner; scores of formulas for developers are before him, but what does he know of the properties of the different ingredients? The pyro, what is it for, and how does it act upon the emulsion or the plate to bring out the latent image? The carbonates of soda and potash? He sees that some use one, some the other, and some both. Is he told their action and the requisite amount necessary to produce that action, and what is the sulphite of soda added for to the above, sometimes in "A," and sometimes in "B?" He is told that citric acid and its salts, and the bromides, are restrainers. Restrainers of what? He sees that the bromides are recommended for over-exposed and under-exposed plates; but why? And so on. Even the fixing bath is a perplexity to the beginner.

But even when he has mastered, to a considerable extent, the properties of the different articles comprising the developing bath, his troubles are not at an end. The great array of unscientific, incongruous, bulky, wasteful, and happy-go-lucky developers (and a careful survey of the different published formulas will soon show that each of the above classes have one or more in its ranks) stare him in the face. From which is he to choose? If he is determined to know himself, and not take the word of another, he begins by mixing up one developer after another according to the formula given in each case, and tries them in turn, in search of a good developer and the one that will give him the best reward for his work, but he soon finds the shelves of his dark room full of bottles and his pocket-book empty. Or suppose that a fair young lady amateur, not having the knowledge, time, or facilities to prosecute the above experiments, chooses, by the advice of a friend, a certain developer, which must be made up strictly in accordance with the formula. Intending to take a trip for a short stay in the country where she hopes to make some shots at choice bits of woodland and lawn, she has the developer made up for her at the nearest drug store, never dreaming of the result in bulk. Now "A" calls for 60 ounces, "B" 46 ounces, and an equal quantity of hypo solution is required. To start she must sling her camera in its case over one shoulder, tuck the tripod under her arm, seize two one-gallon demijohns in one hand, a demijohn of the same size and one or two hand-bags in the other. Her dismay at this bulk can easily be seen. "The impediment" of this outfit would soon tire out the most enthusiastic of amateurs.

How much better it would be, especially to the amateur, if all the formulas were given so many grains to the ounce of water. It would take but a glance to convince him whether it was a scientific one or not, and whether the proportions of its ingredients were correct and capable of producing the best desired results. What a saving of time and money it would result in; saving in solution of many of the salts used, and especially sulphite of soda, which rapidly deteriorates and becomes useless, or nearly so. Why then make them in that way? Why not let the formula read:

Carbonate of soda	So many grains.
Sulphite of soda	" "
Pyro	" "
Water	1 ounce.
Carbonate of potash, or soda	So many grains.
Water	1 ounce.

And then multiply each ingredient by ten or its multiple, and you will have a developer of sufficient quantity and sufficiently fresh to meet all demands; and then, if the plate makers would paste on the cover of their boxes their formula for the developer reduced to grains to the ounce, it would be of great advantage and economy to any one trying one or two plates. The developer could be made up before opening the boxes.

A careful analysis of eighteen published formulas show a great diversity in the amounts of the ingredients, and

The largest amount of pyro used to the ounce of water			10	grains.
“ “ sulphite of soda	“	“	80	“
“ “ carbonate of soda	“	“	40	“
“ “ “ of potash	“	“	$21\frac{2}{10}$	“
The smallest amount of pyro used to	“	“	$1\frac{3}{5}$	“
“ “ sulphite of soda	“	“	5	“
“ “ carbonate of soda	“	“	$1\frac{1}{5}$	“
“ “ “ of potash	“	“	5	“

In many of the formulas the amount of sulphite of soda was largely in excess to the quantity generally conceded to be required in proportion to the pyro, 4 of sulphite of soda to 1 pyro. But in one we have sulphite of soda, 50 grains, pyro, 6 grains. Another formula says his alkali is weak, 40 grains to the ounce of water!

The use of saturated solutions in making up the developer should, I think, be discarded, for the reason that they are uncertain, the changes of temperature and evaporation rapidly affecting them; and then the mixing of two or more saturated solutions oftentimes produces the deposition of more or less of one or both of the salts, but never in equal proportions.

I think also that the use of either the dry or granulated salts is also objectionable, especially the carbonates—carbonic acid is not the most stable element. In the crystal you have a fixed and determinate quantity, and they should therefore always be called for.

I have not referred to the part of the question whether the ounce should always be regarded as composed of 480 grains, for if the method of writing the formula in so many grains to the ounce of water be adopted, there is no further trouble to be apprehended as to whether the ounce is $437\frac{1}{2}$ or 480 grains. But should the term be used? I think that the quantity in grains should be given (in $437\frac{1}{2}$ or 480 grains). This is rendered necessary from the fact that most of the articles used are sold by avoirdupois weight, $437\frac{1}{2}$ grains. Another good plan would be, in directions for making up the formula if the grain system is not adopted, would be to say: Water, to make so many ounces. One should recollect in reading the English formulas that there is a difference of 4 ounces more in the pint used by them.

PHOTOGRAPHIC LENSES.

BY J. TRAILL TAYLOR.

(*Continued.*)

Aplanatism is a somewhat ideal term, and cannot with strict accuracy be applied to photographic lenses. It was originally employed in 1791 by a Scotch savant, Dr. Blair, to denote lenses free from spherical aberration, in like manner as achromatism signifies freedom from chromatic aberration. Popularly, it is held to designate an objective which gives sharp central definition with its full aperture, no diaphragm being employed. But this even an imperfectly corrected lens will do, provided its diameter be sufficiently reduced. We can, therefore, only talk in this connection by degrees of aplanatism, which would be the better understood if we had a zero from which to start the scale. This zero might be made to equal *f*-1, or a diameter equaling the focus; but, at any rate, the term, as it at present exists, has not a sufficiently definite meaning. With this, by way of protest against the mythical expression, I observe that of all photographic lenses extant, the old portrait combination is that in which the property of aplanatism, or maximum angular aperture, is greatest. As is the relation of aperture to focus, so is the intensity of the illumination. While a large angular aperture conduces to rapidity, in the same degree is it adverse to penetration, or the property of presenting on a plane surface, and with a degree of definition which satisfies the requirements of the artist, objects situated at various distances. This property of penetration or depth of defining, unthinkingly called "depth of focus," is a power of great value to the photographer, and is induced by means hereafter described.

The Optical and Focal Center.—It is in many instances desirable that one should be able to know where the optical center of a lens is situated. It is a property of this center that any ray, refracted by the lens, which passes through it emerges in a direction parallel to its incidence. It is from a point near to, although not quite at, the optical center of a lens, or combination of lenses, that the focus must be measured. To find this center, draw two parallel radial lines, one from the center of each curvature, and both being oblique to the axis; then connect the points at which they touch the curved surface by a line, which, in the case of a meniscus, must be prolonged till it meet the axis. The point at which this junction line touches the axis is the optical center. In class-books on optics the following rule is given: "Multiply the thickness of the lens by the radius of one surface, and divide the product by the sum of the radii, and the quotient is the distance of the center from the vertex of that surface."

In a combination of lenses there is no fixed point which can be termed the optical center. The mistake is frequently made of assigning it to a position near the diaphragm which has not necessarily any relation to that of the center, which can only have its position determined upon knowing the precise circumstances under which the combination is to be used, for it has strict relation to the conjugate foci. What is commonly termed the optical center in a combination is in reality the center of conjugate foci, and this is determined by the conjugates, which may change with nearly every change of picture taken.

The equivalent focus of a lens is so termed from an image formed by it equaling in dimensions that made by a single lens. It has no relation to the misleading term "back focus" so frequently employed. It is not difficult to conceive of an objective, the back focus of which—that is, the distance between the posterior surface and the ground glass of the camera—may be four inches, while the real or equivalent focus is eight inches. As it is of great importance that photographers know precisely the foci of their lenses, I shall describe methods by which this may be ascertained. Let me first of all describe that, although it has been taught by some that the focus must be measured from the optical center, this is not quite correct. In every lens or combination there are two nodal points, which are centers of admission and emission. They are sometimes designated the Gauss points, from the fact of Gauss having communicated an investigation of their properties to the Royal Society of Göttingen in 1840. In the case of a simple biconvex lens these points are situated between the optical center and the surface, while in a meniscus lens it is outside of the lens and a little within the optical center. It is the back nodal point which concerns us at present, as that is the one from which the focus is measured. In a rectilinear combination this posterior focal center is situated between the diaphragm and the back lens. Opticians interested in this are referred to Secretan's treatise on the true point from which the focus should be measured, or to Gauss's memoir.

It has often been recommended to determined the true focus of a lens of this nature by focusing the camera upon an object, so that the image and the object shall be of precisely the same size, and divide the distance apart of the two by four, the quotient expressing the true equivalent focus of the lens. This is altogether misleading as applied to the combination lens in common use, the focus thus obtained being greater than the true focus by nearly one-fourth of the distance at which the lenses are separated in the mount.

Out of several methods by which the equivalent focus may be ascertained, I shall mention only a few. Select a very thin spectacle glass which, after trial, is found to give an image on the focusing screen of the same dimensions as that given by the photographic objective; and the distance of that glass from the focusing screen, less one-fourth its thickness, is the focus. Or, having marked upon the ground glass the precise spots upon which two well-defined objects depict their images near the margin on opposite sides of the screen, unscrew the lenses from the mount and insert a pin-hole diaphragm made in a thin metal plate. Rack the camera in or out until the images made by the pin-hole correspond with that of the lens in dimensions. As before, the distance between the ground glass and diaphragm is the focus.

(*To be continued.*)

OUR ILLUSTRATION.

The pretty indotint picture that forms the frontispiece of this issue of the Bulletin is from one of the negatives made by Professor French, and called the Sketch Club series. These were all made with the Dallmeyer W. A. lens, with the back combination removed, and on the Stanley Plate. The example we give with this issue of the Bulletin speaks well for the intelligent use of the apparatus and materials, but most of all for the artistic taste of Professor French.

THE PHOTOGRAPHS FOR THE SHAH.

The Department of State have been very much gratified at the response to their invitation, issued through us in the last number of the Bulletin, to the photographers of the country who desired to contribute pictures for the collection being made to present to the Shah of Persia, and in order that none who desire to contribute may be prevented from doing so by the short notice given, they have requested us to state that the time may be extended until April 15th, when all pictures for the collection should reach us.

A New Ferrotype Collodion.—It is generally supposed that about all the changes have been rung upon the ferrotype and its production. Yet our publishers have been working upon the question of ferrotype collodion, and have produced a combination that gives very excellent results. The samples we have seen of the work done with this new collodion are clean and bright, and certainly appear to be a real advance in a much neglected branch of the photographic art. A number of practical ferrotypists have tried this new film solution and pronounce it a decided success. The following developer is recommended for the new collodion, but any good ferrotype developer is said to work as well; nevertheless, the good results obtained by those who have tried were secured by using this formula:

Protosulphate of iron	2	ounces.
Acetic acid	2½	"
Alcohol	2	"
Water	1	quart.

Verbeck's Picture Clasp is a neat method of holding a number of photographs together, in place of an album. It consists of a series of clasps so hinged together that the pictures are held firmly, and can easily be inspected. One advantage of the arrangement is that the collection of pictures can be placed on edge like a half opened album, and thus form a pretty ornament.

ANTHONY'S
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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.**
and a corps of practical assistants.
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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED MEETING of the Society was held Wednesday evening, March 2d, with the *President*, Mr. FREDERIC GRAFF, in the chair.

Attention was called by the *Secretary* to circulars which had been received in regard to an exhibition to be held in March by the Pittsburgh Amateur Photographers' Society.

The Committee on Membership reported the election, as Active Members, of Dr. Charles L. Mitchell and Messrs. C. Howard Clark, Jr., Richard W. Kear, Meredith Bailey, John Carbutt, Jr., and Seldon L. Walkley.

The Executive Committee reported that they had considered the matter of permitting members to use the room for private lantern exhibitions. They preferred that the question of allowing the privilege be decided by the society as a body, and in the event of a favorable decision they had prepared, and would submit to the society for approval, a series of rules, under which, in their opinion, the privilege should be granted.

After a short discussion, it was decided to grant the privilege, and the following resolutions, embodying the rules suggested by the Executive Committee, were passed:

Resolved, That the Executive Committee be, and are hereby, authorized to allow any member in good standing to have the use of the room and society's lantern for the purposes of exhibition in the room, under the superintendence of an expert approved by the committee.

Provided: The member applying for the use of the room shall pay all expenses, and furnish the gas and lime used.

Provided: No member shall be prevented from being present at such exhibition; but notice of the fact of such private exhibition shall be posted prominently in the room for three days prior to the exhibition.

Provided: The same member shall not be accorded such permission more than once in any one month, nor shall more than two exhibitions be given in any one week.

The gatherings shall be solely for the purpose of lantern exhibitions, and no refreshments of any sort whatever shall be served in the room.

The paper for the evening, written by Mr. Charles R. Pancoast, was read, in his absence, by Mr. John G. Bullock, the subject being "Photographing at Niagara Falls," illustrated by about twenty-five lantern slides taken from negatives made by Mr. Pancoast. [See next BULLETIN.]

Mr. FREDERICK E. IVES made a short address on the subject of Photographing by the Aid of the Phosphorescent Tablet. He said:

Photography by the aid of the phosphorescent tablet is not a new discovery, having been known since 1880. It is not even a practically useful method, and is interesting only from a scientific point of view. My own experiments with the method having resulted in the discovery of certain facts not previously known, I have been persuaded to show the results, and make some remarks concerning them.

The facts, already well known, are that Balmain's phosphorescent paint, which probably consists chiefly of sulphide of calcium in a suitable vehicle, becomes luminous when exposed to light, and the light emitted acts powerfully on photographic sensitive plates; also that heat releases phosphorescent energy. Solarized phosphorescent tablets have been used as a source of light for contact printing in the dark room, and negatives have been made by exposing the tablet in a camera, and then making a contact exposure on a photographic sensitive plate in the dark room.

Such a photograph I now show. It has a somewhat granular appearance, due to the coarseness of the particles of sulphide of calcium, and although the lines are partly sharp, they appear surrounded by a sort of halo. The editor of the *British Journal of Photography*, in a recent editorial, advanced the theory that this effect was due to a spreading of the phosphorescence, and that it would be impossible to obtain a sharp camera photograph by the aid of the phosphorescent tablet. My belief is that the phosphorescence does not spread, and that the effect is due merely to the fact that the luminosity of the phosphorescent coating extends to considerable depth, and the light from the lower part of the layer acts diffusely, because it is radiated from a point at some distance from the surface of the photographic sensitive plate. To test this, I exposed a tablet in the sunlight until fully solarized, then removed it to the dark room, and placed it in contact with another tablet, under pressure. It was impossible to discover any communication of phosphorescence by contact, and if any occurs it is insignificant. I also observed that prints and camera impressions on my tablets appear perfectly sharp to the eye, and found that they could be reproduced sharply by photographing in the camera. I therefore conclude that it is possible to make sharp camera photographs by the aid of the phosphorescent tablet, but that the method has no value, because it is always easier and better to make photographs in the usual way.

It has been suggested that the tablet might offer some advantage in the reproduction of colored objects. It is true that the color-sensitiveness is not the same as that of silver bromide, but the difference has been found to be altogether in favor of the silver bromide.

The second known fact that I mentioned, is that heat releases (exhausts) phosphorescence. It does not appear to have occurred to any one that this might be made a means of producing camera pictures by the action of the heat, until I discovered that the obscure heat rays of the lime light spectrum produced a strong impression on a solarized phosphorescent tablet. I succeeded in producing heat pictures of objects under certain conditions, which are described in a communication to the Franklin Institute and published in the Institute Journal for this month.

Mr. Ives showed on the screen several photographs, among which was one showing some buildings, made by the use of a phosphorescent tablet in the camera, and another in which a metallic object had been photographed by the action of reflected heat rays on the tablet in the camera.

Mr. GRAFF showed a photograph which had been presented by Mr. Samuel L. Smedley, City Surveyor. It represented an excavation made in constructing the tunnel on the line of the Schuylkill River East Side Railroad at 25th street, near Spring Garden. On the rocks shown in the picture, two very distinct profiles of human faces could plainly be seen. Unfortunately they were not discovered in the photograph until after the excavations had been filled in.

Mr. ROSENGARTEN showed an interesting and valuable illustrated work on "The Percheron Horse," by Mr. Walters, of Baltimore. The illustrations were reproductions from photographs of celebrated horses of this breed, made by the Messrs. Schreiber of this city.

Adjourned. ROBERT S. REDFIELD,
Secretary.

PHOTOGRAPHIC SECTION CINCINNATI SOCIETY OF NATURAL HISTORY.

THE meeting, held on March 3, 1887, was called to order by *President* BULLOCK.

A large number of ladies and non members were present, in addition to about twenty members of the society. The following members were proposed and elected: Dr. A. L. McCormick and Robert S. Fulton.

The first set of one hundred slides contributed by the St Louis Camera Club to the American interchange of slides were shown, a short review of which is given below.

Mr. Johnston then read a paper on the Detective Camera [see next BULLETIN], exhibiting at the same time a Schmidt, one of Eastman's, and several detective cameras of home manufacture. There was also exhibited an improved Blair camera.

ARCH. I. CARSON,
Secretary.

LANTERN EXHIBITION.

The first slides of the American interchange for the circuit for 1887 to be received at Cincinnati, were those contributed by the St. Louis Association of Amateur Photographers. Some ninety slides composed the series, embracing quite a variety of views in and about St. Louis, the West and Northwest.

The slides were exhibited at the rooms of the Photographic Section of the Society of Natural History, on Thursday evening, March

3, 1887, before a large audience of ladies and gentlemen, members of the section and their friends. The credit of having the St. Louis association represented in the interchange this year seems to be entirely due to but four of its members, for all of the slides save twelve are contributed by them in nearly equal proportions, and these twelve in the name of the association itself. These gentlemen, Messrs. Achterman, Bain, Butler and Dunn, are to be congratulated upon the work which they have undertaken. Among Mr. Achterman's pictures which deserve more than passing notice are his "Lake and Bear Pits," in the St. Louis Fair Grounds, and a view in Milwaukee, entitled "Nieland's Grounds," the latter having the lights and shadows well massed.

Mr. R. E. M. Bain is happy in his reproduction of the foliage which all but covers the "Speaker's Stand," at Jefferson Barracks, Mo. "Tucker's Station," at St. Louis, by the same gentleman is an excellent slide, and the subject is very suggestive of the rugged bits of scenery on the Chesapeake and Ohio Railroad near Hawk's Nest.

Mr. W. M. Butler's best contributions are his "Government Bridge at Fort Snelling," and "The Little Dalles of the St. Croix."

Mr. J. W. Dunn furnishes perhaps the finest specimen of lens work in the whole series, in his picture of the "Franciscans' Church," in St. Louis. Beside being perfectly sharp throughout its entire depth of field, it is an excellent slide in composition and tone. His "Burros," representing that much abused beast of burden of the Far West, is well done, and had the riders not been looking at the camera, would have constituted an admirable genre picture.

Among those contributed in the name of the association itself are several meritorious slides, particularly the two views of the St. Louis Bridge, "The Glen," and "Osceola Falls," in Wisconsin, and the "Bluff at Taylor's Falls," on the St. Croix River, Minnesota. As a collection, perhaps there is too much repetition of subjects in and about St. Louis, but when the small number of contributors is considered, this form of criticism can be dispensed with.

We are very glad to welcome St. Louis into the interchange, and hope this season's efforts may encourage her to better things in the future.

Owing to the fact that no printed or written list of the slides and their makers accompanied the set, each slide had to be announced as it was put in the lantern.

A box specially constructed for the carrying of slides, and a complete list of the subjects and makers of those sent, are of great assistance in the matter of receiving and forwarding slides intended for the interchange.

THE BOSTON CAMERA CLUB.

Field Day and Competition on Twelve Consecutive Exposures.

At the regular meeting on March 3d, the Club approved of a proposal for a Field Day, leaving date and rules in the hands of the Committee on Entertainments. The committee has decided on Thursday, April 7th, and to govern the contest have adopted (subject to additions or alterations) the following

Rules.

I. Only members of the club can compete; other amateurs may join the party and exhibit their results at the same time and place, and be notified of their rating.

II. Members of the club, or any other amateurs desirous of joining the party, must notify Mr. Reed on or before the 30th inst. The Committee will make no arrangements unless there are at least six entries.

III. The committee intend that the party shall go by rail to some place fifteen to thirty miles from Boston, and there use carriages. Due notice will be given through the mail, and on the bulletin board in the rooms, of the objective point and how to reach it, to those who may have entered their names.

IV. Each contestant must be prepared to make twelve exposures, all out of doors. No limit as to size, speed, or make of plate. Paper negatives may be used.

V. Each must develop his own plates and prepare them for printing. He can intensify, reduce, spot, or retouch all he pleases; show his ability in any manner to correct defects; or so improve the negative as to make better prints than would be otherwise possible.

VI. The resulting negatives must be delivered to the committee at the rooms within ten days from the date of exposure, with fifteen cents for each negative delivered to pay for printing and mounting. (Any one who prefers may make his own prints, but deliver them, unmounted, with the negatives, one week later.) The mounts will be uniform, and the decision of the judges will be written on the margin. After they have been exhibited, all will be bound and kept in the rooms as a memento and record of the contest. The package of negatives must be marked with a letter which will be assigned to each competitor in such a way that he alone will know his mark. The respective owners can have their negatives after they have been exhibited.

VII. Each competitor may send in with his negatives an unmounted print which is his standard, and in comparison with which his work must be judged, the main idea of this Field Day being to see which member of the party can obtain the greatest percentage of success in getting negatives according to his own ideal.

VIII. The result of each exposure will be figured by points, as follows:

a Focus	0 to 5
b Time, or exposure	0 to 5
c Development	0 to 5
d Condition of negative (to obtain highest rating it must be free from fog or stain; "quick printing;" neither intensified, reduced, spotted, nor retouched. Such work will receive due credit from the print)	0 to 5
e Print, from the negative	0 to 5

IX. Artistic qualities or "combination."—Where the object or scene admits of being taken in different ways or positions, the judges will rank those of each subject by themselves, giving to the best the number of points that there are members in the party, and grading the rest off in their order of merit. It is possible for the poorest negative to obtain highest artistic rank.

X. A diploma of the club will be awarded to the one scoring the highest number of points on the first five ratings, and another diploma to the one scoring the highest number of points artistically. Successful competitors, before they can receive diplomas, must furnish in writing all particulars as to their operations, viz.: Plates used, maker and brand; lens, and diaphragm (in proportion to equivalent focus); time; development, what with; if intensified or reduced, how?

The committee expect to be able to keep the day's expenses less than $5 to each member, aside from plates and the printing. The earlier that it is known that a party will be made up, or its probable size, the easier it will be to make necessary arrangements. If April 7th should prove unpleasant, the trip will be postponed to such day as at least six members will go.

Wm. Garrison Reed,
David S. Lewis,
Committee.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Regular Meeting March 1, 1887.

President H. J. Newton in the chair.

The *Secretary* announced the receipt of the usual number of photo journals and papers monthly contributed to the section, for which a unanimous vote of thanks was tendered.

The Chairman of the Executive Committee reported that at the next regular meeting, April 5th, Professor L. H. Laudy would give a lecture entitled "Arcadia and the Maritime Provinces," illustrated with lantern slides.

The subjects of the evening would be "A Perfect Camera," by Dr. M. N. Miller, and the "Electrical Method of Instantaneous Exposure Measurement as Exhibited in Dr. Higgins' Pendulum Plate," both of which subjects would be illustrated by the stereopticon.

The chairman of the committtee also stated that at the meeting in April, Professor Laudy had promised to exhibit some of the finest views in his possession, and as he was one of the latest and best writers on the history and uses of the magic lantern, and an expert in all that pertained to lantern exhibitions, it was reasonably expected that the meeting would be an unusually interesting one.

All present were cordially invited and requested to extend the invitation to their personal friends.

The programme for the May meeting was also announced, and will be duly published in the April report.

The President now introduced Dr. Maurice N. Miller, of the University of the City of New York, who he said would speak on the subject already announced by the Executive Committee.

Dr. Miller entertained the audience for an hour, speaking without notes and illustrating his subject with blackboard sketches and finely colored lantern transparencies.

He said: The camera to the construction and application of which he wished to call attention was not a patented instrument. The maker had doubtless depended upon perfection in mechanism as security against infringement. The Doctor said he perhaps had obtained his audience under false pretenses, as the subject was not entirely photographic. The camera he alluded to was the human eye. The eye was guarded as jealously and protected as carefully as the most fastidious photographer cared for his camera. The horny box, consisting of seven separate pieces, was described, as well as the wonderful means for cleaning the front surface of the optical apparatus by means of the tears.

The exposing apparatus was shown to consist of a peculiar muscular arrangement, by means of which the individual had perfect control over the admission of the light rays.

Reference was then given to the arrangement for position.

Delicate cords (muscles) were attached to the eye-camera, traction upon which enabled the owner to select the field of view.

Dr. Miller then described the walls of the eye. Instead of the usual form of camera box, the eye camera was spherical.

The walls were made in three thicknesses—the outer to give strength; the middle one black, to prevent reflection and loss of light; and the inner coat the screen or retina. The reflective media were described as a system of lenses, so arranged with reference to curvative and refractive index as to form the most perfect image on the screen. The diaphragm (the iris) was mentioned as the most perfect in form, capable of adjustment in size according to the requirements of the individual.

Focalization in the eye was accomplished by a most wonderful condition, that of flexibility in the crystalline lens.

The curvature of the front surface of the biconvex lens could be altered at the will of the individual operator according as near or far distant objects were to be focused. The screen of the visual apparatus was described at some length.

The Doctor said that the part upon which the images were formed was practically an expansion of the optic nerve. That as the nerve coming from the brain entered the orbit from behind, it penetrated the two outer coats and then spread out, and by millions of minute interwoven threads formed a sheet or screen upon which the image was formed.

It was curious that, notwithstanding its structure, the nerve was not itself sensitive to light. The Doctor then described the rods and cones by blackboard drawings, and indicated how these minute elements were set in vibration by the light rays, which motion was eventually recognized by the brain as light or color.

Some very interesting facts were then brought out in connection with the physiology of vision. Dr. Miller said that experience only enables us to erect in the mind the inverted pictures of the eye. The remarkably small size of the retinal image was illustrated. The Doctor said that the diameter of the image of an object six feet square when placed forty rods away was only about one-fiftieth the diameter of a human hair. Again, that the picture on the retina of a man half a mile distant, while perfectly distinct, was so small, that if the man should move six feet across the line of vision the image on the retina would travel less than one ten-thousandth of an inch; that the entire picture upon the retina was less than half an inch in diameter; and that the angle of the field of view included in a single distinct picture was only about ten degrees.

It is difficult in a brief synopsis to give an adequate idea of the numerous elements of mechanism described and illustrated, or to express in a few words the application every thoughtful photographer might make of a lecture of this sort, and thus widen his own vision in an art science more or less related to all others.

Dr. Miller was warmly applauded at the close of his instructive and entertaining lecture, and was given a hearty vote of thanks by vote of the section.

The attention of the audience was next called to Dr. Higgins' method of measuring the exact time of exposure in making what was commonly called instantaneous views. Mr. O. G. MASON said that the Doctor was unable to be present, and he would therefore describe, so far as he was able, this novel mode of measurement.

A transparency of the pendulum plate and its electrical appendages was then projected on the screen and minutely explained.

Mr. Mason said that with this apparatus the one-thousandth part of a second of time could be noted, and hence the relative sensitiveness of the different kinds of emulsion plates now in the market could be accurately determined.

Only a brief mention of this measuring apparatus need be here recorded, for to be used successfully by either the amateur or professional photographer requires more than a verbal explanation. [See page 175].

Miscellaneous pictures, consisting of landscapes and water-scapes made by *President* NEWTON, were now projected on the screen and briefly described by him; after which he happily expressed the general sentiment of the audience in a few appropriate eulogistic remarks respecting the lecture of the evening. These remarks were followed by questions, naturally suggested by the lecture, from some of the auditors, and after being answered by Dr. Miller, the section, on motion, adjourned.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting, January 11, 1887.

(*Continued.*)

Mr. Grisdale—About two years ago I was in the Catskills, and went to the local photographer to change some plates. During a conversation, he made a statement to the effect that a quick plate that he had used could be worked perfectly clean under a light that fogged a slow plate of another maker. The statement did not appear reasonable to me, but as I was on my first trip with dry plates—consequently a very immature amateur—I did not contradict him. A member of our Dry Plate Committee made some experiments with a color screen, exposing plates of different makes a fixed time under the same light. On being developed, some showed quite a strong impression in the greens and reds (colors used in dark room illumination), while others gave perfectly clear glass under the same conditions, showing that some plates are more sensitive to certain colors than others, which may account in a great measure for different results being obtained under apparently the same conditions. I think the suggestion in regard to putting the plates into the developer at some distance from the dark room light a good one. If you must work near the light, don't take them out of the developer oftener than is absolutely necessary.

Dr. Piffard—The slowest plates I ever used in my life were the ones that would fog the easiest under those lights upstairs. I think Mr. Grisdale has struck the key-note. Some plates are more sensitive to certain colors than they are to others.

Mr. Walker—Why is it that a collodion wet plate, on which an instantaneous view has been made, can be developed in a white light, a kerosene lamp? I have seen it done.

Mr. Beach—Because that is yellow light.

Mr. Walker—Yes, it is a yellow light when the chimney is smoked up a little.

The *President*—Yes. Wet plates are very much less sensitive.

Mr. Walker—How can you take an instantaneous view on them then.

The *President*—That is possible with a bright light.

Mr. Walker—I wish you would explain it to me, because I would like to know. I would like to know how two pictures on two different plates, one a dry plate and the other a wet plate, one being taken into a white light and developed will not fog, and the other taken into the same light will fog? Where is your reasoning? What is the reason one fogs and the other does not?

The *President*—You refer to a wet collodion plate. That is not sensitive at all to the yellow light, and especially to a light like a kerosene lamp, if it is not turned up too high, or a gaslight.

Mr. Walker—Why?

The *President*—Because it being a yellow light, it is non-actinic to a wet plate. I don't think there is much use in discussing it. The question is, what is the best and safest light to develop the ordinary gelatine plate by? I hold, as Mr. Grisdale suggested, the best way is to keep the plate a little away from the light while you develop, and then as the image comes out place it closer. The best way to satisfy yourself on that point is to try an experiment.

Mr. Walker—I have seen it done. I tell you I cannot take my dry plate into the same light without fogging it, but I can take it to a yellow light in my observatory, and there it will not fog? Now, what is the reason?

The *President*—Argued that a silver paper though slower than a wet plate, would not turn under a yellow glass for the reason that the transmitted light was non-actinic. So a wet plate would not be affected in a weak yellow kerosene or gaslight.

Dr. Piffard maintained that Mr. Beach's position was wrong as to printing through a yellow glass, as he had repeatedly printed from a weak negative after first coating the back with collodion slightly tinted with yellow, and had secured vigorous prints.

The *President* in reply, stated that he once had a negative which had been insufficiently fixed, so that a portion of it turned yellow. He had tried many kinds of solutions to eliminate this color, but of no avail. Though left in a printing frame in a bright sun all day, the paper would not turn under the yellow stain, so that it was impossible to obtain an uniform print.

Dr. Janeway--I think that can be answered; the yellow stains that are seen in some negatives are not like a clear yellow glass, but are actually a species of fog, which retards the printing powers of the negative. As the night is advancing, the next questions should be presented some other evening, and if there is no objection the rest of this discussion will be postponed.

[The President then took the chair.]

Mr. Baker—I would like to state that the glass used on the side lanterns upstairs is the same glass which was recommended by Mr. Debenham two or three years ago; that is, a combination of green, orange and yellow, supposed to be the best colors used.

Mr. FRISBIE—The green light underneath the right hand lamp was a bluish-green.

Mr. BAKER—I would not advise any one to develop by it—that is the overhead lamp. It is only desirable as giving a moonlight effect.

The *President*—For the information of the members, I would state that we have been replenishing the lanterns upstairs with new glass, and it is the light Mr. Baker speaks of. It was simply put in as an experiment. Undoubtedly we shall experiment with the glass until we get what we think is pretty near safe; and in order to arrive more definitely at this conclusion, I think it would be a good plan to appoint a committee, and if the gentlemen will serve, I will appoint Mr. Newton, Dr. Piffard, and Mr. Frisbie as a committee to make an investigation into the best kinds of glass for our lanterns, etc., for the benefit of the members. I authorize them to buy the glass and experiment, and the association will bear the expense incurred, in order that a satisfactory conclusion may be reached.

Mr. NEWTON—I desire to say just one word on developing lantern slides. The subject was discussed early in the evening about developing with an alkaline developer. I have exhibited slides several times, and they always were developed with alkaline developer. In reference to the yellow color, which seemed to be objectionable to some, it can be avoided by using sulphite of soda in developing, at least 50 grains to the ounce, and don't keep the sulphite in solution, but use it dry, as it deteriorates and doesn't produce the desired effect. You should add 50 grains to the ounce for lantern slides immediately before adding the pyro, and about one grain of bromide of soda. With such a developer you will have no cause to find fault with the color of the resulting slides, whether soda or potash are used separately or combined. In either case the color will be the same. The sulphite of soda which I employ is what is usually sold by stock dealers.

Adjourned.

[Soon after the meeting the President added the name of Dexter H. Walker to the Committee on Dark Room Lights.]

SECOND WINTER LANTERN EXHIBITION, JANUARY 26, 1887.

THE meeting was called to order shortly after 8 o'clock, *President* BEACH in the chair.

A synopsis of the minutes of meeting of January 11th was then read and adopted.

Secretary GRANGER then read the following communication.

[Letter from Anthony & Co.]

NEW YORK, January 25, 1887.

F. C. BEACH, Esq., *President, The Society of Amateur Photographers of New York.*

DEAR SIR,—We take pleasure in handing you the accompanying copy of the BULLETIN for 1886, which we beg to present to the Society of Amateur Photographers of New York, with our compliments and well wishes for the continued prosperity of that body.

Very truly yours,
E. & H. T. ANTHONY & CO.

The *President* then made several announcements, stating that the next meeting would be held on February 8th, when Dr. Janeway would read a paper; also that on Friday evening, February 11th and 18th, there would be test exhibitions of lantern slides for the benefit of members, to which they were privileged to invite their friends. On those evenings the Lantern Slide Committee would have the society's lantern in operation. The Third Winter Lantern Exhibition was to be held on February 23d, when slides contributed by the Cincinnati society and members of our own society would be shown. Members were urged to prepare slides for the occasion and submit them to the Lantern Slide Committee, to which Mr. William M. Frisbie had been added as an additional member.

The *President* also stated that Mr. Dexter H. Walker had been added to the Committee on Dark Room Lights. He continued by saying, in substance, that at a recent meeting of the Board of Directors he had been requested to appoint a special committee of three, consisting of Dexter H. Walker, Chairman, Daniel P. Read and William M. Frisbie, to receive suggestions, in case any member desired to offer any, as to what changes might be desirable to be made in our present Constitution. It has been thought that, in consequence of the present rapid growth in the membership of the society, some alterations should be made.

I trust members will avail themselves of the opportunity thus offered, and will freely communicate to the committee such suggestions as may seem to them to be beneficial to the future welfare of the society.

The *Secretary* then read the Librarian's report.

REPORT OF LIBRARIAN.

The Librarian reports that since the last meeting there has been presented to the society the following books:

The *Photographic News* Year Book for 1887. By F. C. Beach.

A bound volume of ANTHONY'S BULLETIN for 1886. By E. & H. T. Anthony & Co.

Respectfully submitted,

ROBERT BAKER,
Librarian.

The *President* then announced the election of the following new members: Active, Henry L. Cammann; Associate, Mrs. Augusta F. Arnold; Subscribing, E. W. Scripture; Corresponding, Edward B. Gallaher and Calhoun Latham.

He called attention to the photographic exhibition to be held in March, and desired members to subscribe for season tickets.

He next exhibited a new form of camera manufactured by the Blair Camera Company, named the "Lucidograph," the peculiarity of which was that it was extremely compact and light, though large enough to take a 5 x 8 picture. When packed for carrying it resembled an ordinary mahogany box. One side being hinged, when turned out at right angles formed a brace for the folding bed rack, when the latter was let down in front. The frame carrying the lens front was adjustable for tilting the lens up or down, intended to answer for the double or single swing. The lens front was adjustable vertically. By releasing a certain lever at the back frame of the bellows, the entire bed rack could be quickly adjusted sideways for the purpose of performing the functions of the ordinary side swing. At the rear was the usual ground glass, held in position by two flat springs. The apparatus as a whole was well made and handsomely finished.

Mr. Beach then called the attention of the members to the handsome and substantial 6½ x 8½ Blair camera which, though presented to the society some time ago by the Blair Company, had just been delivered. It would probably be rented to members for use in landscape work. The Secretary was directed to send a letter of thanks to the company for this very useful and exceedingly ornamental gift.

An English 3½ x 3½ metal detective camera was then exhibited. The plate holder, though but a quarter of an inch thick, was made of metal, and was held in place by means of a light hinged metal frame attached to the back. When the plate holder was not inserted, the frame held in place the light ground glass. The body of the camera resembled in form a four-sided truncated pyramid, and was provided at the front with a rather long focus lens placed at a fixed focus. A delicate metal drop shutter was also arranged to fit over the cap of the lens for instantaneous work. The camera as a whole was very neatly made, but the President thought it too heavy for such a small machine. He then operated the shutter.

Following the exhibition of the miniature camera, the *President* stated that Mr. Carbutt, of Philadelphia, who was present, had handed him a modification of a iron developer for lantern transparencies which he regarded as an improvement over anything he had previously tried, from the fact that it appeared to render the blacks in a transparency more transparent to transmitted light, and to add more snap and brilliancy to the transparency as a whole.

The following is Carbutt's improved formula for an iron developer for lantern slides:

A.

Oxalate of potash	8 ounces.
Citric acid	60 grains.
Citrate of ammonia solution	2 ounces.
Water	30 "

B.

Sulphate of iron	4 ounces.
Sulphuric acid	8 drops.
Water	32 ounces.

C.

Citrate of ammonia solution.

Dissolve 1 ounce citric acid in 5 ounces of distilled water, add liquor ammonia until a slip of red litmus paper just turns from the red, then add water to make the whole measure 8 fluid ounces.

DEVELOPER.

Add 1 ounce of B to 2 ounces of A, and ½ ounce of water and 3 to 6 drops of a ten per cent. bromide solution.

The *President* remarked that specimen slides brought by Mr. Carbutt would be thrown on the screen, showing the difference between the improved and old developer.

The lights were now turned out and the lantern exhibition commenced by the exhibition, first, of the second one hundred English views sent from London. Messrs. Lawrence and Frisbie, assisted by Mr. Baker, operated the lantern, while Secretary Granger, stationed in the rear part of the hall, announced the title of each view as it appeared.

REGULAR MEETING, FEBRUARY 8, 1887.

THE meeting was called to order at 8.15 P.M., *President* BEACH in the chair.

The *President*—The first business of the evening will be the reading the synopsis of the minutes of the previous meeting by the Secretary.

The minutes of the previous meeting were then read by the Secretary, and, on motion, were adopted.

The *President*—The next matter will be the reading of communications. We have a communication from Dr. Arthur H. Elliott.

The *Secretary*—The letter from Dr. Elliott reads as follows:

OFFICE OF ANTHONY'S PHOTOGRAPHIC BULLETIN.
NEW YORK, January 28, 1887.

F. C. BEACH, Esq.,
President of the Society of Amateur Photographers,
122 West 36th Street, City.

DEAR SIR,—I have the honor to present to the Society of Amateur Photographers a number of photographic studies of Fr. Müller, of Munich. These were part of Müller's exhibit at the St. Louis Exhibition of the Photographers' Association of America. The exhibit obtained the gold medal for foreign portraits.

Hoping that they will be interesting to the members of the society,

I remain, very truly yours.
ARTHUR H. ELLIOTT.

The *President*—We have the pictures here on the desk. They are very fine specimens, and will be shown to the members at the close of the meeting.

We have another very interesting photograph which I received to-day from Colonel A. C. M. Pennington, the Superintendent of the Department of Photography at Fortress Monroe, Va., and the communication from him will explain it.

The *Secretary*—The letter is as follows:

UNITED STATES ARTILLERY SCHOOL.
Department of Photography.
FORTRESS MONROE, VA.,
February, 6, 1887.

MY DEAR SIR,—I send you by to-day's mail a print of myself playing a game of chess, with myself looking on at the game. Please add it to the collection of photographs of the Society of Amateur Photographers. I send it merely as a curiosity, and not as a photograph in an artistic point of view. I made it merely as an experiment. The printing was from three negatives by a system of vignetting and not by masking.

Yours truly.
A. C. M. PENNINGTON,
Brevet-Col. U. S. A.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—Subscriber writes: I shall feel truly grateful for an answer to the following question through the columns of your very valuable PHOTOGRAPHIC BULLETIN in next issue if possible. I wish to know how to roughen a large pane of glass with fine surface to focus upon, of the same quality as that used for camera ground glass?

A.—You can use negative varnish thinned with alcohol and flow cold. In this case you will have to experiment a little to determine how thin to make the varnish to secure the right surface. Or you can use Hances' ground glass substitute, which works very nicely; this can be obtained at any photographic stock dealers or of our publishers.

Q.—H. S. S. writes: Will you kindly inform a subscriber, through the BULLETIN, what is the best method of cleaning ferrotype plates after they have once been used and proved to be unsatisfactory. Also, how to remove finger-marks and other blemishes from same, so as to render them fit for use?

A.—If the plates are still wet after development, simply washing and rubbing the film with the fingers is sufficient. If they are dry, use alcohol and a piece of soft rag. Clean off the finger-marks and blemishes with rag and alcohol.

Q.—D. H. N. writes: Please inform me as to the best method of reducing silver in old hypo solution in which gelatine negatives have been fixed; it appears to be more difficult than hypo in which prints only are fixed. Also advise me about reducing silver from old pyro and soda developer.

A.—Add to the hypo bath a solution of sodium sulphide or potassium sulphide until no more black silver sulphide is formed. Allow to settle, pour off the fluid above the sulphide of silver and wash several times with water. Then filter and dry the silver sulphide. Mix the dry sulphide thoroughly with an equal weight of dry sawdust and twice its weight of dry, powdered saltpetre. Drop the mixture into a red hot fire clay crucible in small quantities, or into a clean red hot iron ladle. The silver sulphide is reduced to spongy metallic silver, which is thoroughly washed with water. In heating the mixture use small quantities at a time and allow heat to act until the mass ceases to burn. Old pyro developer does not contain any silver, at least only traces.

Q.—A. J. T. writes: Will you please tell me the best way known to screen a sky-light? In what shape should the curtains be hung, and should they be white cloth?

A.—Curtains on Hartshorne's spring rollers are very good; but strings running through small brass rings about six or eight inches apart and fastened to pulleys above answer very nicely. Use white muslin for the material.

Q.—E. A. K. writes: Please give me, through the columns of the BULLETIN, a formula for toning silver prints without gold, and oblige.

A.—Try the method suggested in the first article in this issue of the BULLETIN, "Toning with Platinun." With a little care and experimenting it could be used for albumen prints.

Q.—S. S. C. writes: The answer you give in regard to the stained print I sent you is not correct. If you will examine the print, you will see that it has not been in the hypo bath at all. The stains come on while being printed. The paper when put on the negative is all right; but when taken out of the printing frame, the edges of paper are as per print sent you.

A.—Now that you have given us a little more information we think we know the source of trouble. The stains are undoubtedly due to hypo. This is not only our own opinion, but that of a number of practical photographers to whom we have shown the print. The hypo stain is probably from poorly washed negatives, as you say that the paper is stained after coming out of the printing frame. Try washing the negatives better, and see if we are not correct in our idea.

Views Caught with the Drop Shutter.

W. T. BROCKENSHIRE, of Wingham, Ontario, Canada, lost his studio in a fire that destroyed the block where he was located on March 13th. The loss was partly insured.

J. W. BRYANT, the well known maker of Papier Mache Accessories, at La Porte, Indiana, sends us his illustrated price list. The designs are unique and artistic.

DR. E. L. WILSON, of the *Philadelphia Photographer*, makes a very generous offer of books at a low rate. Tissandier's History of Photography, Vogel's Progress of Photography, Gihon's Colorist's Guide, and Robinson's Pictorial Effect. We have them and they are very good.

WILSON, HOOD & CO., of Philadelphia, send us their neat little bargain list for 1887. These gentlemen are well known for their enterprise and liberal business methods, and any of our subscribers who want to get some bargains should send for their new list. Their house on Arch street, Philadelphia, is one of the best in the Quaker City; they are the agents for all the best photographic materials, and especially of the American Artists' Association for enlargements on platinum, silver or bromide paper.

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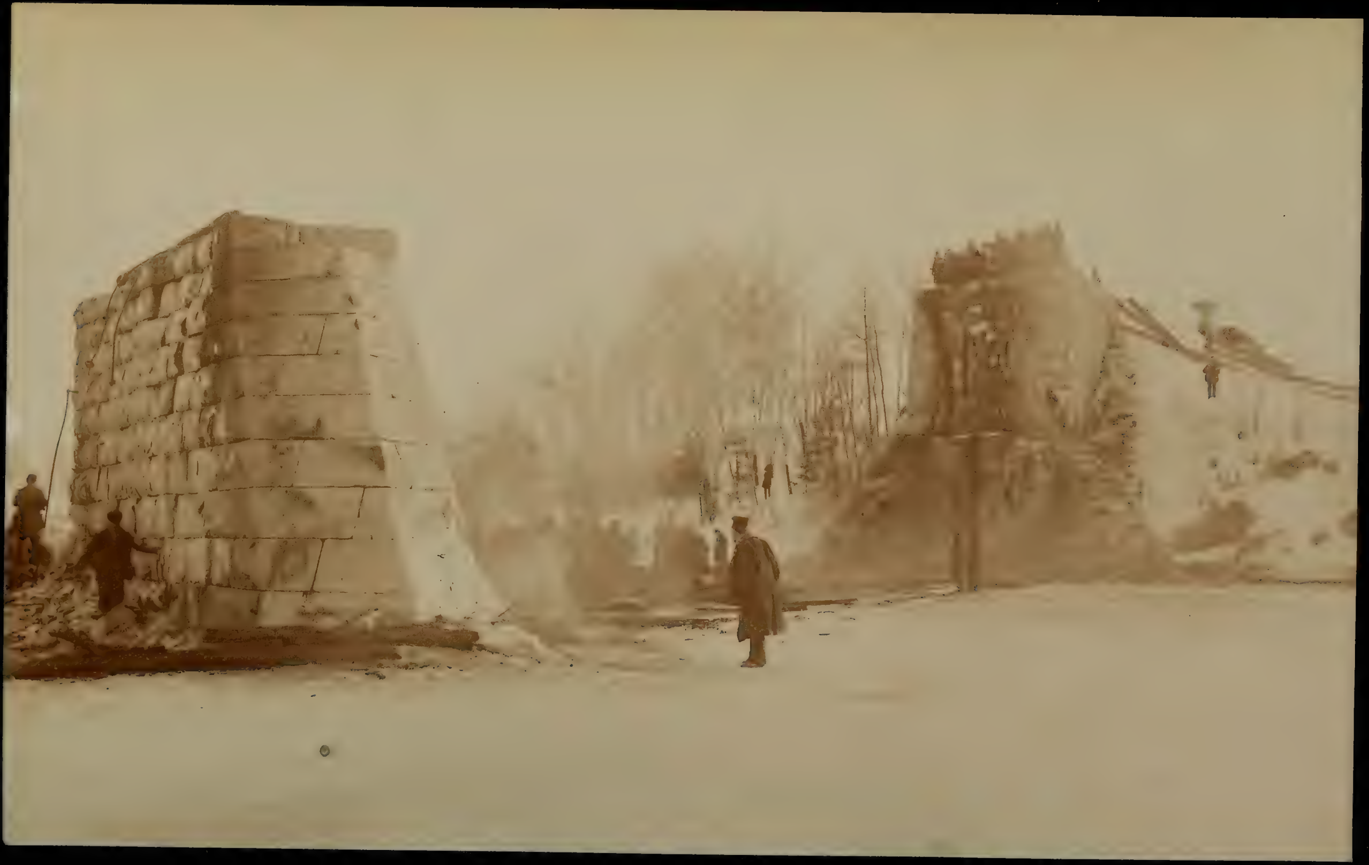

PRINTED ON N. P. A.
EXTRA BRILL. PENSE
ALBUMEN PAPER.

Railway Disaster at West Hartford, Vt.
Feb'y. 4th, 1887.
W. G. C. Kimball, Photographer,
CONCORD, N. H.

NEGATIVE ON
STANLEY DRY PLATE.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

APRIL 9, 1887. Vol. XVIII.—No. 7.

THE FIRST ANNUAL EXHIBITION OF PHOTOGRAPHS.

The exhibition of photographs by the united societies of New York, Boston, and Philadelphia, afforded a large amount of pleasure to the lovers of the art in New York City and vicinity. From the "private view" on Saturday evening, March 26th, to the closing on Saturday, April 2d, the large room of Ortgies Gallery on Broadway was a scene of interested crowds every day and evening, viewing the handsome display of pictures collected under the auspices of the Society of Amateur Photographers of New York. Too much praise cannot be given to the hard-working committee of the joint societies who had charge of the arrangements. Everything that good taste and convenience could suggest was used to make the display a success, and Messrs. Canfield, Beach, Granger, Redfield and Cabot deserve unstinted commendation for their good management and thoughtfulness.

It will be impossible for us to spare space to do justice to every picture, and we shall only have the opportunity to speak of the more striking exhibits, and these but briefly.

But before we speak of the pictures, we cannot help saying that the New York Society did not do itself justice in the number of pictures displayed by its members. The number of the New York exhibitors (38) was greater than those from Boston (17) or Philadelphia (19), but the number of pictures sent by each exhibitor was small, compared with those of the exhibitors from the other societies. Nevertheless the quality of the work was good, and we note with much pleasure the handsome display made by the New York ladies.

The exhibit which in the opinion of the judges deserved the first place was by Frank Sutcliff, of Whitby, England. This consisted of a number of frames of studies that in technical execution and artistic merit were of the highest order. The pictures were all 6½ x 8½ silver prints and embraced rural scenes, marine views, groups of fishermen with boats, children, and all those charming combinations of life and natural scenery that delight the eye of the artist. Our professional friends will be interested to know that Mr. Sutcliff is a professional photographer.

The second in order upon the list of the judges comprised two exhibits, one by an English amateur, F. P. Cembrano, of Richmond, near London, and the

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other by J. P. Loud, an amateur, of Boston, Mass. These two exhibits are classed together for their poetic treatment of the subjects. Mr. Cembrano's exhibit consisted of a set of 5 x 7 pictures in platinotype of scenes in Derbyshire and on the River Thames, near London. The view "Earlsfield after Sunset," was one of the most beautiful photographic pictures we have seen, while the "Study of Trees at Dorking" was a gem of this class of work. In Mr. Loud's exhibit, the "Hall in Old Mansion, Quincy," and the two pictures each entitled "Wood Road" pleased us most and were finely done.

G. B. Wood, of Philadelphia, obtained a diploma for his entire exhibit, which consisted of ten enlargements on bromide paper, 17 x 24 in size, and forty other pictures from 5 x 8, and larger, negatives. This was by far the best exhibit from the artist's standpoint. Mr. Wood, being an artist, has carried his artistic feeling into his photographs, and the results are simply wonderful. All of the pictures are studies and each one tells its own story. We can only mention a few, and would simply remark that those who failed to see them missed a rare opportunity to observe what can be done with photography in the hands of one who does not simply take a photograph but also makes it a picture. "His First Cigar" represents a number of boys sitting on a rail fence smoking, and one little fellow, overcome in his efforts to follow the example of his companions, is resting his head against one of the lower fence rails with a face that speaks of agony and woe. His companions upon the upper rail have faces beaming with that deviltry that only the small boy knows. Another fine study in this exhibit is "On the Fence," where a charming little girl with a very pretty face is sitting on a stile with two young gentlemen, one on each side of the rail, and with all the air of a coquette is evidently playing with the hearts of both her admirers. The action, the feeling in the faces, the posing, and the surrounding, are of the most interesting character and fills the picture with every artistic expression. Yet another picture is "Just One More," where a young gentleman is endeavoring to capture a kiss from a little maiden who is somewhat unwilling. Here the same charming artistic spirit is thrown into the picture which pervades all the work of this exhibitor. This is the same study that obtained for Mr. Wood a medal from the Photographic Society of Great Britain. We wish we could tell more of our impressions about this fine exhibit, but this must suffice.

Professor Henry A. Rowland, the well known physicist of Johns Hopkins University, obtained a diploma for an excellent series of pictures illustrating surf and cloud effects, also a pair of very handsome yacht pictures. All these were upon 6½ x 8½ plates, and in addition to being very handsome pictures were interesting as examples of rapid exposure and the obtaining of curious effects. The pictures of the surf were some of the best we have seen, and a couple of prints gave views of sunset, an effect we do not remember to have seen produced before, at least not so well. A yet more interesting piece of work by Professor Rowland was his enlarged photographs of the normal solar spectrum, which on twelve sheets covered a length of 25 to 30 feet, and showed an amount of patient work that is seldom found in the United States. "A Summer Afternoon on the Porch," by the same exhibitor, was also remarkably good as a photograph, and an exceedingly pretty picture.

Robert S. Redfield, the Secretary of the Philadelphia Society, got a diploma for his fine views on 6½ x 8½ plates. "At the Forge" was a capital picture of a roadside smithy; and "Harvesting," an example of double printing, was also excellent; while the view "Near Newport, Va.," was an example of the best kind of photographic work in all its details; the fine distance, the detail in the foreground, and the excellent point of view, made this picture exceedingly charming to look upon.

John G. Bullock, of Philadelphia, obtained a diploma for a handsome exhibit on 6½ x 8½ plates, three of which pleased us very much: "An Idle Moment," "After Lunch," and "Graham's Mill." In the two former the grouping of the figures was excellent and very artistic; while in the latter the picturesque view of the old mill was a very charming study.

J. P. Gibson, of Hexham, England, was the next to obtain a diploma from the judges for pictures on 6½ and 8½ plates, and an exceeding pretty set of photographs were presented, consisting of interesting old ruins, river views, and studies of foliage and sunshine.

Horace A. Latimer, of Boston, Mass., also obtained a diploma. This exhibit consisted of a number of 5 x 8 views in the Yosemite Valley, California, and were exceedingly interesting for the idea of vastness that they gave to these wonderful scenes in the West. One view, "South Fork Falls," was the first photograph ever made of that interesting waterfall. Another interesting picture was the "Yosemite Falls" (2,634 feet).

John L. Stettinius, of Cincinnati, Ohio, got a diploma for a couple of instantaneous pictures, "The Jumper" and "The Diver." These were remarkably fine productions, every muscle in the figures standing out clear and well defined. The yacht "Pasque," by the same exhibitor, was also a fine piece of photographic work.

Our space for this issue of the Bulletin is now exhausted and we shall have to defer further comments until the next number. In the meantime we call the attention of our readers to the report of the judges on another page.

EDITORIAL NOTES.

According to some experiments of C. Schiendl on orthochromatic photography, aniline blue (bibricher indigo of Kalle & Co.), berberin, alizarine, and salicine, are very useful sensitizers for gelatino-bromide plates. Aniline blue sensitizes for orange and red, berberin for green, alizarine for yellow, and salicine for orange. For portraits salicine and alizarine are recommended, while salicine and berberin are suited to landscape negatives.

In the French journal *L'Amateur Photographe* we note a suggestion for a modification of the platinotype process. Instead of using the regular platinotype paper, it is proposed to sensitize paper with ferric oxalate and gum, and develop with a bath of potassium oxalate and platinic chloride which is warm. The ferric oxalate on exposure to light becomes ferrous oxalate, which in presence of a solution of potassium oxalate instantly decomposes platinic chloride and deposits the metal in a fine state of division. The idea suggested above appears to us a good one, as the minimum amount of platinum is used to produce the image, and there is not so much waste as in the ordinary method with platinotype paper.

We are indebted to Professor C. Piazzi Smyth, the Astronomer Royal for Scotland, for a handsomely printed and bound monograph on "Bermuda Meteorologic," which contains a most painstaking set of researches upon the climate of the Island of Bermuda, and is finely illustrated with a picture of a wonderful cloud effect and a set of spectroscopic views of rain bands. We tender the kind Professor our best thanks for his handsome gift.

The Quebec Camera Club was organized on February 8th, and the following officers were elected for this year: *President*, Captain James Peters; *Vice-President*, J. George Garnean; *Secretary*, Ernest F. Würtele; *Treasurer*, James Brodie; *Committee*, J. B. Amyot, W. E. Russell, and Captain Imlah. A Constitution and By-Laws were adopted and ordered to be printed. We are glad to know of the organization of the club and hope to see some good work done by its members, some of them having already made a reputation in our art.

The Brooklyn Academy of Photography has been organized and incorporated by Wallace Gould Levison, Frank La Marina, J. L. Cornell, W. T. Wintringham, G. B. Brainard, John Lefferts, Jr., John Merritt, C. H. Carter, Willis Dodge, and Gonzola Poely. The objects of the academy are for the scientific, historical and artistic advancement of photography.

Sarony, of New York, has made a large collection of photographs illustrating the comedy "The Taming of the Shrew" as produced at Daly's Theatre. Four large pictures illustrate the principal scenes, taken by the aid of the electric light, and all the artists and the costumes are perfectly reproduced. Besides these there are 22 imperial cards of the prominent actors and other members of the cast. The whole affair is unique and reflects the good taste of Mr. Daly as well as the remarkable skill of the photographer.

Magnesium wire or ribbon can be used to obtain artificial light for taking photographs, but its price depends upon the cost of the metallic sodium used in its production. Mr. Castner, a graduate of the School of Mines, Columbia College, has recently invented a process by which metallic sodium can be made for about sixteen cents a pound in England, and it is very probable that at an early date magnesium will be much cheaper than at present and within the reach of any photographer who desires to use it. Up to the present time sodium has cost about one dollar a pound.

Mr. W. K. Burton, the well known writer upon photographic subjects, has recently been appointed by the Japanese government to fill the "chair" of Sanitary Engineer in the Imperial Institute of Japan, and leaves England at an early date to engage in his duties.

HOW TO CHANGE BLUE PRINTS TO DARK BROWN.

Dissolve a piece of caustic potash about the size of an ordinary soup bean in five ounces of water. It will dissolve in a few minutes. Place your blue prints in this solution, and in a short time they will fade to a pale orange-yellow color. When all the blue tints have disappeared, wash in clean water. Now dissolve a partly heaped-up teaspoonful of tannic acid in about half a pint of water. Put your yellow prints into this bath, and they will immediately begin to assume a brown tone. Permit them to remain in the tannic bath until they are as dark as you desire. Then take them out, wash well, and dry.—*Scientific American.*

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Photography of the Invisible—Copying Opaque Objects by Artificial Light on Dry Plates—Application of Phosphorography in Printing Processes—The Ear and the Likeness—How to Print on Eastman Paper by Artificial Light.

MIRACULOUS things still take place, particularly so in photographic circles. Photography of the invisible is nothing new, but it has generally been looked upon more or less as a curiosity. And now comes Professor Zenger, of Prague, and reports to the French Academy in Paris about his new "Phosphorography," that is, photography with Balmain's luminous paint. These communications to a scientific body deserve consideration, although they sound strangely. Zenger writes in the *Compte Rendu:*

"I made a trial to take pictures with camera and lens upon a glass plate coated evenly with Balmain's luminous paint, the same as with collodion. After an exposure of a few seconds I brought the exposed plate in contact with an ordinary not very sensitive dry plate in the dark room. After an hour's development the picture appeared as usual with all its details.

"By my observations in Geneva, I was led to believe that lime, exposed to a dazzling sunlight during the day, might emit some invisible but very effective rays. During the night of May 17, 1884, I exposed, at midnight, under a cloudy sky, upon the terrace of the astrophysical laboratory at Prague, a plate coated with luminous paint for fifteen minutes, and then brought it in contact with a dry plate until next morning, when it resulted in a sufficiently good picture of the steeples and buildings of Prague. Bodies influenced by light will therefore, in the absence of any other light, emit actinic rays even at midnight.

"Later on I repeated the tests with printed paper, which I exposed during the day to full sunlight. After an exposure of one hour I brought it in contact with ordinary photographic paper in the dark, this giving after a few hours a distinct copy, which only needed fixing. The letters appeared distinctly black, and I have applied this method to copy music."

Here we have, therefore, not only a scientific curiosity, but a result which admits of practical application. Nothing seems to be more simple than to expose a drawing of which copies are wanted, first to the sun and then bring it in contact with photographic paper in the printing frame. The sunlight being much stronger in America than in Europe, many photographers and amateurs might be induced to repeat this experiment.

Professor Zenger communicates still more. He writes:

"Quite recently I had the idea to make tests with fluorescent bodies sensitive to actinic light, as the uranates and uranium nitrates.

"By bathing English paper of very even texture in a solution of 10 parts nitrate of uranium in 100 parts of water and then bringing it in contact with paper which had been exposed to light, I have succeeded in obtaining latent images which can be developed after months, provided that they are kept in a dark and completely dry place.

"Therefore pictures may be obtained in the dark from a number of bodies, if they possess the same property as carbonate of lime paper, to again emit the light slowly which they have absorbed during exposure."

Dr. Zenger omits here to inform us how to develop the pictures, if with silver salts (formerly uranium pictures were developed with silver nitrate, without pyro) or otherwise. It is a fact that paper exposed to the sun is only slightly luminous when brought into the dark. But even if it has produced an impression upon positive paper, it will very likely emit light chemically strong and effective. Eastman's paper is ten thousand times as sensitive as ordinary silver paper, and a few seconds' exposure should therefore be sufficient.

Another communication, which is almost as curious, is made by M. Boudet, of Paris.

According to his reports, one succeeds in obtaining negative copies from opaque originals by placing a dry plate, sensitive side up, upon a mirror, and upon this the original to be copied, held by a glass plate. If the whole is now exposed to a strong artificial light, sideways, a negative will be obtained, developable in the ordinary way. M. Boudet found that pictures could be produced in this manner only by reflected light, but never by direct influence of light.

One of my contributors to the *Photographische Mittheilungen*, Mr. Brunner, has repeated these tests and finds them confirmed. He writes:

"If the mirror is replaced by a sheet of black or white paper, similar pictures, as by Boudet's process, are obtained. But a more or less distinct negative can also be obtained if the rays of a weak light are allowed to act directly upon the back of the dry plate and through the sensitive film on to the original laying upon same (*e. g.*, a black drawing on white paper, a piece of newspaper, etc.).

"The execution of this test can be done in this manner: The original picture is laid upon the sensitive side of the dry plate, and upon this a piece o card-board. These three articles are tightened sideways by rubber bands. The back of the upright standing plate is exposed to light for about forty seconds at a distance of fifteen centimeters from an alcohol lamp. The plate, and original, for the purpose of weakening the light, can also be inclosed in a simple wrapper of white writing paper, so that the rays will act through it. The development of the picture upon the exposed plate takes place in the ordinary way."

This interesting test may be explained in the following way: The rays penetrate from the back of the plate evenly to the light-sensitive molecules and then partly pass the same to the original picture. Then they are reflected from the light parts of the picture and return for the second time to the nearest light-sensitive molecule. No reflection takes place from the dark picture parts. The molecules of that part remain untouched from this secondary light influence. This small difference of lighting is sufficient, it seems, for the development of a picture. It is also possible that a weak phophorescence of the white parts of the original, produced in passing by, adds to the formation of a picture upon the plate.

Another photographic curiosity which I have to communicate to you belongs to the criminal world. Many police departments have photographic pictures taken of criminals falling into their hands. Particular value is now placed on the ear of such pictures, as it has been found that this member is just as important in the recognition of an individul as the face, particularly as the former cannot be brought out of shape by willful distortion or change of features. No two individuals of different families have the same ear, but members of one family will generally have the same shape of ear.

The printing upon Eastman paper by lamplight becomes daily more popular.

Ordinarily it is advised to place the light pretty far from the negative, to admit a more parallel falling of the rays upon the plate. Is that now correct? I answer, Yes, for negatives of even density, otherwise not. There are negatives which are dense in the middle and very thin on the outside. These are the wide angle negatives. If such a negative is copied in the ordinary way, the print will be light in the middle and darker towards the outside. This appearance has its full foundation in the different angles under which the rays pass through the objective and fall upon the plate.

According to Stolze's tables (Eder's Year Book, page 63), the intensity of light of wide angle lenses will decrease according to the fourth power of the cosines of the angles of the rays to the axis, so that the illumination on the edge of a wide angle picture of 90 degrees is only one-fourth of that in the middle. If the middle is properly exposed, the ends are under-exposed. If such a plate is to be copied in even light, and the copy to be obtained shall be even, then the end parts have to be partially covered during printing.

It is otherwise in printing upon Eastman paper in artificial light. If the light is placed near to the plate, the ends of the same are more distant from the light than the middle, in consequence of which they get less light in proportion to the square of the distance, and this will further act so much weaker in proportion to its more or less inclined fall. The weakening of the light resulting therefrom is then the same as that of the optical picture towards the outside in case the light stands in the point of focus. If, therefore, the light is brought into this point during copying, an almost even copy is obtained.

Herr von S—— has obtained the best results with a candle. For small plates it would be best to place a screen before the gaslight; or a piece of milky porcelain glass with the printing frame close to the same will do. This principle may be modified in many ways, each case depending of course upon its particular circumstances. The most agreeable part is the very short time of exposure, plates taken with 10 c.m. distance requiring with candle-light an average exposure of 6 to 7 seconds.

BERLIN, March, 1887.

[*From our Special Correspondent.*]

ENGLISH NOTES.

THE weather all over Great Britain has been exceptionally fine since Christmas. Very little rain has fallen, while the temperature of February—our coldest month—was no less than eight degrees above the average of the last six years. Yet with the exception of a few snow scenes, very little outdoor work in photography has been done; while printing on albumenized paper is such a tedious task in winter, that amateurs at all events have all but relinquished it in favor of bromide paper.

But we are on the eve of a great seasonal change; the northern hemisphere is slowly swaying itself to face the sun, and by the time these lines appear in print we shall be in the midst of the very best season for "instantaneous" work, for such I consider the months of April and May to be. At eleven o'clock on a bright spring morning, just after a gentle shower it may be, the man who can take his camera for a walk is a being to be envied. Let him focus on a bend in the road, and then sit down on a milestone and wait for his prey. Round the corner come the cattle bound for some distant market with Hodge twirling his stick; horses, gay with straw adornments, follow; a couple of lounging tramps, splendid models; and then, great prize, a horde of gipsies, and even a menagerie on the move from one town to another. Plates are fired off on the unconscious wayfarers, any or all of whom (such is my experience in England) are only too gratified if requested to wait a bit to have their "picter took" if the artist desires to secure a more artistic pose or grouping.

In developing such work I would say: "Take it easy." Use your pyro sparingly, a grain to an ounce; if your plates are good very little restrainer will be necessary, and for the alkali try potash.

The London Camera Club held one of the now "fashionable" photographic conferences on February 8th, when Captain Abney and Messrs. Adcock, Burton, Traill Taylor, and others, delivered valuable addresses. In the next week's number of the *Amateur Photographer* I was surprised to read an ill-mannered attack upon Mr. Taylor's paper from the pen of his brother editor. Such amenities have happily been rare, of late years, in photographic literature; but this is not the first time that the *Amateur Photographer* has distinguished itself in this manner. Let us hope, too, that it will give up "cribbing" articles from other papers without acknowledgment, and discard the reprints, padding, silly paragraphs, etc., which at present constitute the whole, or nearly the whole, of its contents; together with articles under anonymous signatures, anonymous letters, etc. The Camera Club members have very properly and heartily condemned this attempt to annoy one who was engaged in doing them a service. Doubtless the editor of the *Amateur Photographer* thought to secure a cheap advertisement by getting his journal's name, at least, into our leading photographic paper, the *British Journal*, but I fancy he is by this time "sorry for it." It will be remembered that quite recently he inserted a similar attack on an American writer from the pen of an anonymous critic.

Calling in at the club the other evening, I was much pleased to see the capital lantern slides—some two hundred in number—which have lately been received from America, through Mr. F. C. Beach's kind agency. I consider that they give a better average than the English slides we sent over in exchange for them; but I think that the next batch we send you will show a very great improvement. One fault in many of the American slides struck me—the chalkiness of the high lights, so that parts of the picture looked as if they had been whitewashed. I attribute this in part to an excess of pyro in the developer (not more than half a grain per ounce should be used for scenes with excessive contrasts), and in part to a practice of "rushing up" the negative with a strong developer, so that development is complete in perhaps a couple of minutes. In printing lantern slides by contact, the contrasts can be softened by giving a long exposure at a considerable distance, say four feet, from a gas flame.

The large condensers (six or eight inches in diameter) used in lanterns for enlarging, are of little service when it is required to use the same lantern for showing slides upon a screen. I have just had my enlarging lantern fitted with a four-inch condenser, which, by means of an "adapter," takes the place of the large condenser, and the instrument now does its double work perfectly.

There is one branch of trade in which photography is rapidly taking a leading place, the large and expensive illustrated lists and catalogues used by our great manufacturing firms and their wholesale agents. The belief in the truthfulness of the art here serves it well.

Our Postal Photographic Society has conceived an admirable idea, which I hope will find many imitators. It has selected Dickens' story of the "Old Curiosity Shop" for illustration by its hundred members, and the May album will consist solely of pictures taken to illustrate lines or passages in this book. It would give me great pleasure to see something in this line done on "the other side." Hawthorne and Longfellow strike me as writers that would lend themselves admirably to such a purpose; and how interesting it would be to compare the conceptions of different workers and different minds.

In making oxygen gas for lantern work, I find the addition of a little salt to the mixture of chlorate of potash and black oxide of manganese a considerable advantage; it moderates the rush of the gas, giving it time to be washed thoroughly. My present formula is

Chlorate of potash	16	ounces.
Black oxide of manganess	3	"
Common salt	2	"

This quantity should yield about four cubic feet of oxygen. But if it were not for the difficulty of carriage I should look forward to compressed oxygen in steel tubes superseding our clumsy gas bags at no distant date. The Brins Oxygen Company, of Connaught Mansions, Westminster are preparing to supply oxygen (obtained through the medium of barium oxide) at a very cheap rate. I will try to send you some particulars of their method in my next letter.

But the sun is shining gloriously, and through the window I see my *Marchioness* (in a big sun bonnet) waiting to pose for me, with *Dick Swiveller* (the 'pothecaries 'prentice from round the corner), in my back kitchen, which is luckily well lighted from roof and side. While developing such a "bit" in the dark room, a king on his throne is not envied by TALBOT ARCHER.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

T. C. HEPWORTH, F.C.S., was a lecturer on popular science at the Polytechnic Institution, Regent street. Since that building was transformed into a Young Men's Institute, some three or four years ago, he has, we believe, been acting as manager to the London Stereoscopic Company.

1883. "How to Photograph; or, Simple Directions to Enable a Beginner to take Successful Pictures on Dry Plates." 8vo. 47 pp. Browning, Optician, Strand. 6d.

1884. "Photography for Amateurs." 8vo. 160 pp. Twenty-six woodcuts. Cassell & Co. 1s.

Second edition, 1886. 176 pp. and 32 wood-cuts. Cassell. 1s. and cloth, 1s. 6d. This is a good book, written by one who has had experience in teaching.

SAMUEL HIGHLEY is a veteran photographer, formerly well known both as a dealer in apparatus and as a writer and lecturer.

1871–72. Articles on "Optical Instruments" in Cassell's Technical Educator, Vols. II, III, IV. Cassell & Co., Ludgate hill. 6s. per volume.

J. B. HOCKIN was a member of a firm of chemists and dealers in photographic apparatus.

1853. "How to Obtain Positive and Negative Pictures on Collodionized Glass, and Copy the Latter upon Paper. A Short Sketch adapted to the Tyro in Photography." 23 pp. and catalogue of 8 pp. J. B. Hockin, Chemist, 289 Strand.

1855. "Practical Hints on the Photographic Process on Glass and Paper." Third edition. 12mo. 60 pp. and catalogue of 8 pp. Hockin. 1s.

I have not been able to examine the two earlier editions, but they were both issued during 1854. The British Museum copy of the third edition is a pamphlet in green paper cover, and appears to have been actually published in November, 1854. Many publishers have a bad practice of dating their books a year ahead of the actual time of issue, if it happens to fall during the latter part of the year.

1856. "Practical Hints on Photography: its Chemistry and its Manipulations." Third edition. 12mo. 168 pp. Hockin & Co., 38 Duke street, Manchester square. 1s.

New and enlarged edition. 1860. 167 pp. and one folding plate. Post 8vo. Hockin. 2s. 6d.

Jabez Hogg, M.R.C.S., is a well known surgeon who has long taken an interest in microscopy and photography.

1853. "A Practical Manual of Photography." New edition. 12mo. J. M. Clarke. 1s.

1856. "A Practical Manual of Photography; containing a Concise History of the Science, and its Connection with Optics, together with Simple and Practical Details for the Production of Pictures by the Action of Light upon Prepared Surfaces of Silvered Plates, Paper and Glass, by the processes known as Daguerreotype, Talbotype, Collodion, Albumen, etc," Fifth edition. 80 pp. 28 woodcuts. Published by W. M. Clark, 17 Warwick lane, and sold wholesale by T. Scott, 1 Warwick court, Holborn. 1s.

1886. "The Microscope: its History, Construction and Application. Being a familiar introduction to the Use of the Instrument and the Study of Microscopic Science." Eleventh edition. 8vo. 764 pp. 355 wood-cuts and eight colored plates. (Application of Photography to the Microscope, pp. 157–161). G. Routledge & Sons. 7s. 6d.

Of earlier editions of this book I have been able to trace only the first, 1854; third, 1858; fifth, 1861; and seventh, 1869. No doubt this was a very useful book in its day, but the last edition sadly needs rewriting.

James How, at first "Assistant in the Philosophical Establishment of G. Knight & Sons," succeeded to that old established business; and, although he has been dead for some years, it is still carried on under his name in Farringdon street. The firm of Knight & Sons dated back, as philosophical instrument makers, to 1680.

1855. "On the Production of Positive Proofs from Waxed-Paper, Collodion, and other Negatives," 8vo. 23 pp. 7 wood-cuts. G. Knight & Co., Opticians, Foster lane. This pamphlet is a reprint of a paper read before the Chemical Discussion Society in January, 1855.

W. Hooper, M.D.

1783. "Rational Recreations, in which the Principles of Numbers and Natural Philosophy are clearly and copiously elucidated by a series of easy, entertaining, interesting experiments; among which are those commonly performed with the Cards." Second edition, corrected.

In Vol. II we have a description of a fixed and a portable camera obscura, and of the magic lantern.

In Vol. IV, p. 323, we find an experiment, "Writing on Glass by the Rays of the Sun. In a glass decanter, well stopped, that contains a dissolution of chalk in aquafortis, is put a solution of silver. On the decanter is pasted a paper, from which letters are cut out, and when it is set in the sun the parts on the glass that form the letters turn black."

This entertaining and interesting book contains perhaps the first mention by an English author of an experiment in photography. The experiment referred to appears to have been first performed in 1727 by the German physician J. H. Schulze, for whom Eder claims the title of "the inventor of photography." In 1727 Schulze was engaged in certain experiments with phosphorus. In these experiments he used aquafortis (nitric acid) and chalk. He wished to know the result of the addition of silver to the aquafortis. Accordingly he dissolved silver in nitric acid (thereby forming nitrate of silver) and poured the solution upon the chalk. Accidentally taking the mixture to a window through which the sun was shining, he was astonished to see that the surface of the chalky settlings facing the light became dark. To see if the effect was due to heat rather than light, he exposed some more of the same mixture of chalk and silver nitrate to the dark heat rays from a stove, but found that they produced no effect. In order to try if the action of the light was confined to the surface of the "silver and chalk mud," he fastened threads to the sides of the bottle and noticed that where the light was thus cut off the "mud" remained white. Finally he cut words and sentences out of paper and then stuck the paper on the side of the glass containing his "mixture." Soon every part which was not protected from the sunlight became colored, and every word was clearly brought out in black upon the "mud." When the bottle was shaken up the letters disappeared, and the "mud" was ready to take a new impression. Clearly it was Schulze's experiment, the news of which had traveled to England, that was appropriated by Dr. Hooper.

ROBERT HOWLETT, of "the Photographic Institution, 168 New Bond street," was an able operator and experimenter, who died about 1860 at the early age of 27.

1856. "On the Various Methods of Printing Photographic Pictures on Paper. With suggestions for their preservation tested by practice." 12mo. 32 pp. S. Low, Son & Co. 1s.

CORNELIUS JABEZ HUGHES was one of the best known professional photographers in England. The splendid studio which he built at Ryde, in the Isle of Wight, was frequently honored by visits from the Queen and other members of the Royal Family. Born in 1819, he died in 1884.

1861. "The Principles and Practice of Photography familiarly explained." Published by the author, 379 Oxford street. 1s. This text-book has been a steady favorite, and we can only say that the last (thirteenth) edition was published in 1883, by J. Werge, 11A Berners street. 8vo. 104 pp. 1s. This edition has been revised by Mr. Werge and includes both the collodion and the gelatino-bromide processes.

(To be continued.)

DETECTIVE CAMERAS.

BY W. JOHNSON.

[Read before the Photographic Section of the Cincinnati Society of Natural History.]

The detective camera is gaining in popularity so fast, that at no distant day the outfit of the amateur and professional alike will not be considered complete without it, and happy is he who is now its possessor. Every shot he makes with it, providing it be a success, will be a revelation to him. The time is fast approaching when we shall have to look to it for those choice little bits of nature's painting, those little "genre" subjects which we now secure by dint of coaxing and an infinite amount of patience, not to say the least, the waste of the plates. Even now the street Arab and the country folk can recognize the camera and tripod, disguise it as you may, and the amateur is often met with derisive laughs and bits of pleasantry, such as the following: "Say, mister, will I break the glass if I look at it?" or "Be you an engineer?"

I shall not attempt to explain the exposure and development of the plates, but shall leave this to other members of the club, among whom I may mention Dr. Boutillier, who has more experience in this matter than most of us, and who will, I hope, give us the benefit of his experience in the near future.

I shall endeavor to give you my experience in the construction, and will show the different principles of the cameras here this evening, so that any member wishing to construct one for himself, can do so at a slight expense.

The detective camera does not differ materially from the portrait camera of to-day. It has a lens, shutter, bellows, plate holder and focusing attachment, and sometimes when intended for both time and instantaneous work, a focusing screen, the only difference to speak of being an attachment to approximately determine the focus, so that the operator need not look at the focusing screen. In their construction there are several essential features to be borne in mind, viz.: compactness, weight (with due consideration to strength), simplicity and ease of operation, and moderate cost. Compactness and weight are, of course, dependent on the number and size of plates used, and must be left to the taste of the operator. Simplicity and ease of operation are very essential, as experience will show; as many times we may wish to repeat an exposure and before we can change the exposed for a fresh plate the opportunity is gone.

The moderate cost is dependent upon the taste of the buyer, as the lenses form no inconsiderable proportion of the cost of the apparatus. I have seen very creditable work done by a lens of French make costing from one-half to two-thirds less than one of English manufacture. While being a little partial to the latter, I could not have told which lens had been used in its production. American and English lenses are perhaps more uniform in quality than those of French make.

The German lenses also have a reputation second only to those of England. Long focus lenses are preferable to those of short focus, as they do not, like the latter, distort the perspective, and render more truthfully the view as seen by the naked eye.

As to the size of plate, I find the 4 x 5 the best, as it can be used to advantage in the making of lantern slides by contact. The only objection to a larger size plate is its making the camera so bulky as to become unmanageable. It ought not to be larger than can be held comfortably under the right arm, the box resting on the right hip, its longer proportion from front to back, as this brings the finder more to the front. The release for the shutter should be worked by the middle or index finger of the right hand, as that hand (with the exception of one who is left-handed) is more subservient to the eye than is the left. The focusing might be done with the left hand, it being slower and better adapted to this purpose. The focusing should be done, if possible, by means of a lever underneath the box and out of sight.

As to the best form of shutter, opinions are at variance, some preferring the drop, or a modification of it, others the come and go, while a greater proportion use the circular form for its ease of construction, it being freer from vibration than the other. I prefer the latter, as I can detect no difference in work done by this from the other way.

If the camera is intended for both time and instantaneous work, it should have a pneumatic shutter placed close to the other one, to be used as needed.

The plate holder next demands our attention. There are three or four different kinds at present in use, but for his purpose the amateur will find that known as the feather-weight to be the best, as it is much lighter and occupies less space than the others.

As to external form of the cameras, it has much to do with the success of the operator. If he does not wish to be discovered taking notes he must eschew all bright brass and mahogany, and content himself with a plain leather or cloth covered box, which could be wrapped in a piece of paper leaving the ends open, or inclosed in a false cover, resembling a traveling bag or a set of school books, without interfering with its work. Other forms of disguise may suggest themselves as necessity may require.

PHOTOGRAPHING AT NIAGARA FALLS.

BY CHARLES R. PANCOAST.

[Read before the Photographic Society of Philadelphia.]

It may seem the height of presumption, on my part, to grapple with so vast a subject as Niagara; but while in Buffalo last summer I was enabled to make frequent photographic trips to the Falls, and therefore trust that a few words will not prove uninteresting. For the benefit of those who may contemplate a trip in that direction, I will endeavor briefly to describe some of the most accessible and interesting views to be obtained.

Since the opening of the State Reservation, and the consequent demolition of the unsightly mills and buildings that formerly marred the beauty and grandeur of the place, many views hitherto inaccessible have been opened up. Primitive simplicity, unaided by art, is now one of the great features of Niagara, and one thoroughly appreciated by the lovers of the picturesque. Another feature of the Reservation is the almost entire freedom from "fees," and the annoying solicitations of hackmen and guides.

Those familiar with the geography of the Niagara River are aware that the falls face the northeast, consequently a large proportion of the views must, of necessity, be made against the light. This fact of itself renders the photographing of the swiftly-rushing waters an unusually difficult task. The best time of the year is undoubtedly in the month of June, when the early foliage is at its prime, and before the excursion season has fairly opened. I speak from experience on this point, having suffered from the annoyance of unwelcome "figure compositions" suddenly presenting themselves in the field of view.

At that season, the sun being in its most northerly position, the light upon the Falls is at its best. Ordinarily a bright sun is best adapted for general work, although it must be remembered that in views of the Rapids, especially from the American side, an overcast day will give much the softest results. This, I may say, is true of any view in which there are harsh contrasts.

Two great enemies of the photographer at Niagara are wind and spray. While the former holds sway it is useless to attempt any work. The latter is by no means a constant quantity, and successful views of the Falls proper can only be made when it is at its minimum. Attempts to render what appear to be fine spray effects result only in hopeless fog. My experience has been that it is far preferable for the casual visitor, having but a limited time at his disposal, to eschew the difficult subjects, unless under the most favorable circumstances, and confine operations to views readily attainable, and such "bits" of picturesque scenery as may strike his fancy.

Photographing the Falls from below is attended with so much risk and discomfort, that even the most ardent amateur may be excused from making the attempt; especially is this the case when the results obtained, even under the most favorable circumstances, are not commensurate with the time and labor expended. I have been informed by some of the resident photographers that during the year there are indeed very few days on which really good pictures of the Falls from below can be made. It is useless to attempt photography at Niagara without an exposing shutter capable of giving exposures from $\frac{1}{10}$ to $\frac{1}{100}$ of a second. My own experience was that with very rapid plates the best results were obtained by using as large an aperture as was consistent with fair marginal definition, and as rapid an exposure as any shutter would produce. I am convinced that a larger amount of detail is obtained in this way than where a slower exposure is made with a smaller stop. The extreme darkness of the foliage about the Falls is such as to render the developing of very much detail almost an impossibility, especially so when contrasted with the brightly illuminated water. Plates showing a decided tendency to "softness" will therefore give better results. In order to proceed systematically, the photographer should commence in Prospect Park, as early in the morning as possible, and gradually work around over Goat and Luna Islands, finishing with the Sister Islands about noon.

Views from the Canadian side are best made in the afternoon. I may remark here that neither the American nor Canadian Customs officers stationed at the new Suspension Bridge make any objections to photographic apparatus, unless, however, the enthusiastic operator is sacreligiously inclined, and desires to profane the Dominion Sabbath, then the "blue-nose" official will doubtless interfere. The virtuous Canadians evidently draw the line at photographing on Sunday. On clear days, when the Falls are comparatively free from spray, some very fine effects are to be had from a point near where formerly stood Table Rock. From a point on Clark's Island, about three-quarters of a mile above the Horseshoe Falls, a fine view of the Canadian Rapids can be made. Late in the afternoon, when the shadows fall obliquely, the effect of the turbulent water is superb. For views of this character it will be necessary to increase the speed of the shutter considerably, otherwise the swiftly-moving water in the foreground will be so much blurred as to spoil the general harmony of the result.

To one fond of engineering subjects, the Cantilever Bridge of the Michigan Central Railway will prove both pleasing and interesting. The best point from which to make it, is what is known as the "Old Maid of the Mist" landing, about half a mile above, and reached by a good road down the bluff. The walk along the bluff below the town of Niagara Falls, after passing the mills, is picturesque in the extreme, and affords some excellent subjects. I did not attempt any photographs of the Whirlpool Rapids, and therefore cannot say when and how the best views are to be made. From casual examination, however, I should say that the Canada side, after about one o'clock in the afternoon, would offer the most advantages. Having thus in a general way given some idea of the photographic work to be made about the Falls, I must say that in a field so rich and varied, it is impossible to establish any given route or class of subjects; let the results proclaim at once the individuality of the artist.

Buffalo offers but few inducements to the pictorially inclined. The ruins of Fort Porter, on a high bluff overlooking the Niagara River, and those of Fort Erie, on the Canada side, immediately opposite, are subjects which, if not picturesque, are of great historic interest.

The Government Breakwater, at the mouth of Buffalo Creek, offers favorable opportunities for instantaneous views of the lake marine. To those who may be interested in technical points, I will say that the pictures exhibited were all made with a Ross Rapid Symmetrical lens of 7½-inch focus, using an aperture of *f*-16. The shutter used was one of my own construction.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From Photographisches Wochenblatt.*]

THE CONVERSION OF SILVER RESIDUES INTO NITRATE OF SILVER.

BY F. STOLZE.

(*Continued.*)

II. Treatment of Silver Residues Not Soluble in Hypo.

One part of his residues are obtained by the photographer from his paper. I understand by this not unfixed papers, which, if not toned, should be fixed and then thrown away, as the small quantity of silver contained therein is hardly worth the trouble and expense of reducing to ashes and melting. It is otherwise with toned pictures, in which gold and silver always yield a sufficient, if not large, quantity. These have to be reduced to ashes as completely as possible. This is neither agreeable nor easy. If there is not sufficient draft, the paper will not burn up completely, and a good deal of carbonized matter remaining, makes the extracting of the metals difficult and expensive; if the draft is too strong, a good deal of the ashes will escape through the chimney. I have therefore applied a new method lately, which I will describe. The dry papers are soaked in a saturated solution of potassium nitrate. It is best to produce this warm, at about forty-five degrees C., by dissolving 74.6 parts of nitre in 100 parts of water. The solution is then poured off and the paper is left to dry. Being impregnated with nitre it can be burned to ashes without any draft, by merely igniting in some large metallic dish or vessel. It does not burn with a flame, but is reduced slowly and completely. The ash so obtained is covered with water to which has been added about five per cent. of sulphuric acid. Most of the salts contained in the ashes are thereby dissolved, while the silver remains undissolved. The condition only is that a surplus of acid remains, which can be tested by litmus paper. The still undissolved residue of the ashes is then well washed, making sure, by an addition of muriatic acid to the poured off mother-lees, that if by impurities of the sulphuric acid, or any other circumstances, silver has not been dissolved—which would show by a chloride of silver precipitate—the residue is then treated with nitric acid. The silver dissolves while the gold remains, which is worked in the well known manner with aqua regia into chloride of gold, while from the silver solution the silver is obtained, as described under I, as carbonate of silver.

It is best to work the silver solution at the same time with the one obtained from the silver haloids. The pure nitrate of silver solution is then obtained at one operation. It can be asserted with good conscience that this method is cheaper than the ordinary one of burning to ashes and melting as applied usually. If a carbonaceous ash is to be well brought out, a large quantity of nitre has to be added, besides the other flux, during fusion; the heat at the same time has to be very great, as otherwise much silver will remain in the slags. Again, an important part of the same will penetrate the crucible or remain suspended in the flux. The silver refiners therefore send the broken crucibles and slags to the larger establishments, where they are crushed and worked over again for silver. The photographer of course cannot do this, and for him the above described method is much better, giving him the assurance of obtaining almost all the silver.

III. General Rules.

Photographers precipitate the washings of the albumen prints mostly with chloride of sodium. This is a good method so long as a surplus of that salt is avoided. But, unfortunately, they do it in a way that now and then they throw a handful of chloride of sodium in the chloride of silver vessels, no matter whether there is already a surplus of the same or not. Thus it may happen that a large part of the chloride of silver will dissolve in the pretty well saturated chloride of sodium solution at the bottom, and is poured off with it. It is much more secure therefore to add muriatic acid to the washing water in place of chloride of sodium. Too much will in that way do no harm. The washings can also be precipitated with a soda solution instead of muriatic acid. Thus carbonate of silver is obtained, which can be dissolved directly in nitric acid. Still a caution has to be observed here. If the photographic papers have been salted with chloride of ammonium instead of chloride of sodium, nitrate of ammonia will form during silvering, which passes also into the washings. In this case the silver is not completely precipitated by washing soda, as carbonate of silver. If therefore the precipitating is done after this method, one should be cautious to test the liquid poured off from the bottom for silver with muriatic acid, and to secure the same eventually.

Emulsion residues, instead of squeezing them to shreds and extracting with hyposulphite of soda, can also be heated mixed with muriatic or sulphuric acid until the gelatine loses all binding strength. The silver will then precipitate, when it can be washed and dissolved in hypo for future manipulation.

The principal rule for all these manipulations is that sufficient time is taken. The washing of the precipitates particularly should not be hastened, and sufficient time should be left for settling. Earthen vessels, having openings from the upper to the lower part that can be closed, and from which, at any point, the clear liquid can be let off, are the more suitable ones. Of still more advantage is it if glass tubes are inserted into these openings, bent upward, in the inner part of the vessels, and adjusted outside with rubber tubing. The bottom deposits will then not be disturbed by decanting. For smaller quantities a glass siphon is to be recommended.

Whoever tries the methods described herein will, undoubtedly, be satisfied. With a little care they give complete security, instead of the uncertain methods now generally in use, and most of the photographers will find a day which they can fill out in this way. *Translated by* H. D.

PHOTOGRAPHIC LENSES.

BY J. TRAILL TAYLOR.

(*Continued.*)

The way which I prefer is Grubb's, on account of the ease with which it may be carried into operation and the accuracy of the result. On the ground glass of the camera make two pencil marks at either side, each being a distance of an inch or so from the margin, although this is not material, provided both are alike as regards distance. Having brought up a table to the window, spread upon it a sheet of paper, and upon this place the camera. Focus upon a distant scene, and rotate the camera until a well-marked object in the scene—such as a chimney or spire—is superposed on one of the lines drawn on the ground glass. Now, using the side of the camera as a ruler, draw a pencil line upon the sheet of paper upon which the camera is placed, and rotate the camera so as to superpose the same object upon the other mark on the ground glass, and again draw a line upon the paper. Having removed the camera, for which there is no more use, continue by aid of a flat rule these two angular lines until they meet at a point, then connect them by a line as in the capital letter A, which line must equal in length the distance between the two marks made on the ground glass, and with a foot rule measure the junction of the angular lines to the center of the cross line, and you have the true focus of the lens.

Schroeder's method is also simple and excellent, although it implies the possession of a camera capable of extending to about twice the focus of the lens. Extend the camera until the dimensions of the image on the ground glass and of the object in front are alike. Having marked the position of the camera back in relation to its base-board, slide or rack it in until a distant object is in focus, and again mark the position of the back. The distance between the two positions, or that through which the camera back was made to travel from the first focusing to the second, gives the equivalent focus of the lens. In a rectilinear symmetrical doublet of wide angular aperture which I possess, having an equivalent focus of 13¼ inches, a reputed focus of 13 inches, and a back focus of 10¾ inches, I find that the focal or posterior nodal point is situated 3 inches back of the mechanical center of the lens. This is a matter that greatly concerns those who have to make copies to scale, and who have the sides of their cameras graduated in order to facilitate accuracy and speed.

I shall now show, projected on the screen, a considerable variety of photographic objectives, and make a few observations on each in turn. First of all I remark there are two ways by which a plano-convex or a meniscus lens can be achromatized. A biconvex crown may be wedded to a plano-concave flint, or a concavo-convex flint to a plano-convex crown. If the meniscus is to be very deep in its external form, its components may be a plano-convex crown cemented to a plano-concave flint, although opticians generally prefer that the contact surfaces be curved, on account of the greater command it gives them for the correction.

The earliest form of objective was the plano-convex or slightly curved meniscus. For reasons already given it has a diaphragm, or stop, in front. In order that it should work with a larger aperture, the late Grubb reversed the relative positions of flint and crown, by which he was enabled to bring the diaphragm rather closer to the lens. Still later, the late Dallmeyer modified it by placing the flint between two crowns, for which further advantages were claimed. By recent improvements in the selection of glass and curvature, this old objective (which in all its various forms is still much employed) is now made with such a large fixed diaphragm as to render it capable of being employed in portraiture. This, of course, is owing to the minimizing of the spherical aberration. While admirable in other respects, it is unsuitable for copying or for architectural purposes on account of its refracting the lateral rays in a greater proportion than the central ones. This distortion does not show near the middle of a picture, but becomes apparent when the included angle is moderately wide. From the nature of its construction it cannot supply the condition of orthographic projection, namely, that a ray shall emerge in a direction parallel to that at which it enters. To this end the ray would have to pass through the optical center, which in such a lens cannot be done.

The Petzval portrait lens consists of a nearly plano-convex achromatized lens in front, with a double convex posterior lens at the other end of the tube. This latter is composed of a biconvex crown and a concavo-convex of flint glass, the inner curves not being concentric, and the two are separated to a slight extent. This back combination fulfills a two-fold function: it shortens the focus and thus intensifies the illumination, and as it possesses a large degree of negative spherical aberration it counteracts the positive aberration of the front lens, and thus with a large aperture it brings rays to a sharp focus over a field quite large enough for single portraits. Some years ago Dallmeyer introduced a modification of the back lens, reversing the relative position of its elements, as Grubb had done with the landscape lens, the requisite negative aberration being obtained, as in the Petzval back, by the inner surfaces not being concentric. This form of back lens lends itself to the lowering of definition, when such is desired, as in the case of large faces in which the rugosities of the skin are not always desirable.

An American optician, Morrison, makes some of his portrait lenses (especially those for taking a large standing figure with full aperture) with an uncemented front lens and a Petzval back, the inner curves of the front lens being non-concentric.

The most recently introduced lens of the portrait class owes its inception to Steinheil, and is constructed on lines quite different from all others. The front is a cemented positive combination, and consists of a convex crown and a concave flint and a biconvex crown, these being separated to some considerable extent. Each combination exhibits chromatic and spherical aberration to a large extent, but in an opposite sense, so that the two combinations correct each other.

He has also imported the same idea in the construction of a landscape lens possessing greater power and in which the back crown element is of unusual thickness, and is cemented to the flint. It is claimed for this construction of objective that the marginal definition is of superior class, and that astigmatism has been eliminated. In the landscape form the lenses are set so closely together as barely to permit a diaphragm to be inserted between them. The name "antiplanat" is applied to them.

One or other of the lenses above described is employed in every-day portraiture in the studio. It is that class by which the greatest angular aperture can be secured.

I have said that Petzval made the calculations of two objectives. The second, which lay in abeyance till 1857, was designated the orthoscopic lens, from a property claimed for it of giving rectilinear projection, but which subsequent investigation proved unfounded. Although it has been supplanted by others it is a useful lens, and gives good definition over a moderately large field with a large aperture. The front lens is the usual front achromatic of the portrait combination, with a smaller negative lens, or dyalitic, placed a short distance behind. This dyalitic lens is composed of a meniscus flint and a biconvex crown. This lens is useful when one desires to take a larger image than the extension of his camera permits, as its focal center is anterior to the front combination.

Out of the orthoscopic lens were evolved others of different forms which were free from the imperfection to which I have alluded, the most popular of these being the triple achromatic lens composed of three cemented compounds, the front and back being plano-convex or slightly meniscus in form, with an achromatic negative lens between them by which the field was rendered flat.

The triple combination lends itself in an admirable manner to the production of what I may term a universal lens, by which I mean adaptability or adjustability of focus. Some years ago I constructed a lens of this class in which a very wide slit was cut right through the mount in the position occupied by the concave lens. In this was fitted a sliding piece of brass pierced with four holes, in each of which was set an achromatized lens of a negative power. Notches on the slide insured the lenses being quite central. The combination to which this system is attached is composed of two nearly plano-convex lenses, which when used alone do not give a flat field. By inserting the slide the influence of either of the four concave lenses is to lengthen the focus and flatten the field. The foci I obtain by this slide are respectively seven, nine, twelve, and fifteen inches. When not in use this slide packs away in a neat little pocket case, six inches long by one and a half inches wide, and half an inch deep. Of the advantage of being able to secure more or less subject on a plate without having to unscrew or change the lenses, I need not speak.

Wide angle non-distorting objectives are a great power in the hands of a photographer who knows how to use them aright. Among the earliest of these was the American globe lens, so termed from the outer surfaces forming part of a globe or sphere. From the example now shown, it will be observed that each lens (the combination is symmetrical) is formed of a meniscus crown, with the shorter radius from the optical center, cemented to a concavo-convex flint. The construction of this lens favored the formation of a flare spot or ghost in the center of the picture, which would have disappeared had the maker departed from his globular idea and brought the lenses a little closer together.

In 1864 Ross took the matter up, and brought out a doublet free from the shortcomings of the globe. It was unsymmetrical in internal structure, being composed of a biconvex and a biconcave cemented front, and a concavo-convex and meniscus back combination. The lighter element, as you see, is to the outside of the front and the denser element to the outside of the back. Soon after this Zentmayer introduced a ratio lens, one in which the front and back elements were of dissimilar diameter and focus, the diaphragm being placed in the optical, not the mechanical, center. The objective was composed of two single or non-achromatized meniscus lenses of very deep curvature, and included a very wide angle. A feature by which it was distinguished, consisted in a series of lenses of different foci all screwing into one mount under such circumstances as to retain the diaphragm in the correct position for all of them. This was improved upon by Dallmeyer, who made a wide angle rectilinear lens in which the lenses are each achromatized.

A wide angle lens much used in America, made by Morrison, consists of a very deep achromatic front lens and a single or non-achromatic crown meniscus as a back lens, of rather flatter form than the front. This, presumably owing to slight over-correction of the front, aided by the well known adaptability of the deep meniscus form, defines sharply over an extended field. There are other forms of wide-angle lenses, but I have spoken of most of those of a representative character.

We now come to a class of lenses so similar to each other in construction that one diagram will suffice to illustrate all. They are those to which the prefix "rapid" has been in many cases applied, in addition to a nomenclature so stupendous as would indicate the ransacking of almost every living and dead language to supply.

In 1866 Steinheil introduced a lens formed of two cemented combinations, adapted for covering a moderately large field with an aperture of a seventh of its focus. Instead of forming it of flint and crown glass, which would not admit of such an aperture being employed, he used two kinds of flint glass, one possessing a higher index of refraction and dispersion than the other. From their wide aperture they were designated aplanats.

Numerous makers took the matter up, some by servile imitation, others by making departures more or less slight. This objective, which is more or less good according to the skill of the optician by whom it is made, is, for all round work, one of the greatest possible value, for in a fairly good light it acts as a portrait and group lens; it is sufficiently rapid to enable the photographer to secure horses, even railway trains, in motion; it is orthoscopic, or rectilinear, hence can be employed for copying; and, provided care in this respect has been bestowed upon its construction, it serves as a landscape lens, in giving no ghost or flare. But it is unfortunate that some makers, in their efforts to render it otherwise perfect, do not realize the importance of providing against the defect named. The lenses are separated so far as to hit a happy medium between flatness of field and astigmatism, and this is not unfrequently attended with flare. I have invariably found that this defect may be cured by bringing the lenses a little closer together in the mount. Even so little as the width of two threads of the screw has proved to dissipate flare spot, which in many cases consists of an image of the diaphragm which has a relation of conjugate focus to the back lens when internal reflections form a factor in its production, although it is sometimes occasioned by reflections from the front lens. Some makers of this lens have departed from strict symmetry, and claim that a more satisfactory result is obtained by having the back lens a little shorter in focus than the front.

But to revert to Steinheil. He did not rest satisfied with the introduction of the lens just spoken of, but made another having less angular aperture and greater angular covering power. It is formed of material similar to the other; the lenses are very thick, and are set very close together. Owing to their small diameter, lenses constructed on this principal are singularly portable, considering their great covering power, and one of our leading optical firms of London has made a specialty of extremely portable lenses of construction akin to that projected on the screen, in which the mounts of all are of similar diameter and fit into one flange.

Morrison, of America, makes lenses for which properties analogous to those described are claimed. He employs ordinary optical flint and crown glass, and corrects by making his crown lenses plano-convex, united to biconcave flints, the contact surfaces of which are but very slightly curved. One peculiarity of this form is that definition fulfilling the requirements of artists is obtained by lenses having shallow curves, and being made of ordinary flint and crown they are less liable to discoloration by light or abrasion by friction than if composed of dense flint. The lens shown on the screen also serves to illustrate the configuration of the American leucoscope objective, which, being made of large dimensions and long focus, is mainly intended for large direct heads.

There are several other topics than those touched on which belong to photographic lenses. Among these are diffusion of focus, so called, or depth of definition as produced by spherical aberration and by the use of a diaphragm; astigmatism; conjugate foci; lenses for special purposes, such as projection, enlarging, detective and panoramic cameras; the shape and use of the diaphragm and its its proper position; the nature and cure of distortion; single or unachromatized lenses; the testing of lenses for the various aberrations, and, lastly, their grinding, mounting, and treatment. But it would be impossible to get all these overtaken in one paper.

REPORT OF THE BOARD OF JUDGES ON THE FIRST ANNUAL EXHIBITION OF PHOTOGRAPHS.

To the Committee of Arrangements.

The undersigned, a jury of awards, in presenting their report, desire to state that they have reached a realizing sense of the seriousness of the task before them. Had this realizing sense come sooner, it is doubtful if the subscribers would now be struggling with the problems that so cantankerously refuse to be solved in any way that is like to be satisfactory to everybody. The time has been far too short. The material offered in exhibition has proved far too rich to be lightly disposed of.

The questions of art and technique have opened such wide and far-reaching vistas, with so many interesting side issues and complications and cross considerations, that it has seemed at times almost impossible to reach conclusions that could be clearly stated or satisfactorily explained.

Some work has commended itself because evidently directed by a fine sense of picturesque composition of line or effect, while technically it fell far below almost perfect photographic specimens that, although without art feeling, were too good technically to be passed without commendation.

Your jury have agreed that the highest aim is one that reaches above the precision of chemistry or mechanics, and gives expression to the subtle spirit that pervades all nature, whether in landscape or figure.

To them this exhibition is rich in promise and bright with many examples of promise realized.

The professional photographer who studies it in the true spirit of growth, must find much that will tend to enlarge his boundaries, and the amateur cannot fail to be more deeply than ever enamored of this fascinating combination of science and art.

Attached hereto are the names of the exhibitors to whom the jury have awarded diplomas, with such explanatory comments as the subject seemed to demand.

Respecfully submitted,

James D. Smillie,
George C. Cox,
E. Wood Perry, Jr.,
C. Y. Turner,
George G. Rockwood.

OUR ILLUSTRATION.

With this issue of the Bulletin we give as an illustration a print from one of a series of negatives taken upon the Stanley plate by W. G. C. Kimball, of Concord, New Hampshire, showing the scenes at the late railroad disaster at White River, Vermont. In some of these views the ruins are still smoking and every picture has something of interest in it. The prints were all made for us by Mr. Kimball upon N. P. A. paper, and are excellent examples of his skill as a photographer, as well as his enterprise in getting these interesting, but sad, scenes. The whole series consists of eighteen views, showing: 1. Distant view of bridge; 2. Overlooking wreck; 3. General view; 4. Wreck from below south abutment; 5. Abutment, south end of bridge; 6. South abutment; 7. Overlooking wreck, south abutment, smoking ruins; 8. Remnants of cars and furniture; 9. Paine farm-house, where Conductor died; 10. North abutment; 11. Overlooking wreck, north abutment; 12. Clearing wreck and searching for bodies; 13. Searching for bodies; 14. Scene from below bridge; 15. Searching for dead in the ice; 16. General view of wreck; 17. South abutment and pier between which Pullman car fell; 18. Middle and south piers where two Pullmans fell. Nos. 1 to 4 are 8 x 10, others are 5 x 8 views, and complete sets can be obtained by applying to W. G. C. Kimball, Concord, N. H.

The story of the disaster is briefly this: From a broken rail, or the breaking of an axle on a Pullman car, a train containing Boston and Springfield passengers broke through the bridge, which was 650 feet long and 55 feet high, at about 2.30 A.M., February 5, 1887. After falling the cars took fire and were consumed along with the bridge. Over thirty persons were killed and a like number injured. The thermometer at the time of the disaster was 18 to 20 degrees below zero.

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CONCORD, N. H., April 3, 1887.

Editors of the BULLETIN.

IN complying with your request to furnish the BULLETIN with photographic views of the recent railroad disaster at West Hartford, Vt., I feel that an apology and explanation is due your readers and myself, from the fact that the negatives were made under the most adverse circumstances, and as a result are scarcely worthy your journal.

They were made with the one idea of securing without delay such views as would meet the demand of trade, and in order to do this we could not wait for suitable conditions, but had to take them while the smoke was still rising from the wreck, and workmen were busy removing the charred bodies of the victims.

Some of the negatives were made late in the day, when medium or large diaphragm was necessary, and no exposure was made with the advantage of sunlight; several were made while snowing slightly. No. 9, "The Paine Farmhouse," where the injured were taken and cared for, was taken while it was snowing briskly; but the use of a very small stop, long exposure, and retarded development, overcame the effect of moving snow-flakes, and the result is a good picture of a typical New England farm-house in winter, now made famous by this disaster.

No. 4 (see list of titles) was taken late in the day, a large diaphragm being used, but it is interesting as showing workmen searching for bodies, which as fast as recovered, were placed in the boxes which are seen near the rope used for keeping back spectators.

Aside from illustrating one of the most frightful railway accidents in the country, the pictures show our rough New England hills as they appear in winter.

The lens used was a No. 4 wide angle; the camera, Anthony's Duplex 5 x 8 with 8 x 10 attachment, and right here let me say it is the most useful view camera I ever saw. I selected it last summer in St. Louis while attending the Convention, and after critically examining other kinds.

Prints were made on N. P. A. Extra Brilliant paper. Negatives made on Stanley Lightning Plate and developed with Cooper's formula, modified to suit exposures.

Very truly,

W. G. C. KIMBALL.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

[*From the Journal of the Society of Arts.*]

REPORT ON PHOTOGRAPHY AT THE INVENTIONS EXHIBITION.

BY W. B. BOLTON.

(*Continued.*)

In 1864, Sayce and Bolton conceived the idea of substituting bromide for iodide of silver in a similar manner, and succeeded so well that in that year their process, subsequently called "collodio-bromide" was published. This formed the first practical "emulsion" process, and was the first step in the direction of modern dry plate improvements. The capabilities of the process from its very introduction are shown in the exhibit No. 2254, which consists of some of the earliest negatives taken by Sayce in 1864 and 1865. Some of these in point of quality could scarcely be surpassed at the present day. In course of time the process was improved and greatly simplified, the improvements taking the form of increased sensitiveness, while in the way of simplification the necessity for washing each individual plate was dispensed with by removing all soluble matter from the emulsion in bulk. By this means the preparation of the plates was reduced to the single operation of applying the emulsion to a clean plate of glass and allowing it to dry.

The next advance consisted in the substitution of gelatine for collodion as the vehicle in which to suspend the sensitive silver salt. This was suggested by Dr. Maddox and carried out in practice in 1871, the earliest results of his process being included in the collection of the Photographic Society. This process, though crude, and in its earliest results imperfect, has been demonstrated to be a practical one, but more recent improvements have supplanted it. In 1873 Burgess attempted to introduce commercially a gelatine emulsion, but failed from imperfect knowledge of its physical requirements. Later in the same year Kennett patented his method of preparing a sensitive "pellicle," consisting of gelatine and pure silver bromide, and about the same time Johnston showed how the useless soluble constituents of a gelatine emulsion might be removed by washing. From that time the gelatino-bromide process became a workable one, but it was not until Bennett, in 1878, startled the world by showing the wonderful sensitiveness attainable with gelatine emulsion that it secured any great share of favor. Bennett's process of "prolonged emulsification" involved no new principle, nor probably did the resulting emulsion excel in sensitiveness others that had been previously made by different means. The secret of the apparent increase of sensitiveness lay rather in the extra precautions adopted to secure the already existent but unsuspected sensibility, and the marvelous results exhibited by Bennett at once attracted the attention of the profession, who were not slow in availing themselves of the new facilities thus afforded them, and in a very short time gelatine dry plates had come into general use.

Two remarkable examples of the exquisite sensitiveness of these plates, as compared with wet collodion, are found in the exhibits of E. Dunmore and Boldireff, of St. Petersburg, the one being a view taken by moonlight, the other a series of pictures taken by artificial light and evidently with extremely brief exposures. Dr. Huggins' photographs of star spectra form another instance of the opening up of an entirely new field of scientific research hitherto impossible, and many others could be instanced, such as the admirable photographs of yachts shown by the Paget Prize Dry Plate Company.

Before leaving the subject of negative processes, the replacement of glass by paper or other lighter and less fragile material should be mentioned. In this direction Warnerke has worked for years, and has recently considerably improved his process of preparation, by means of which the natural grain of the paper support is hidden or masked. The Eastman Dry Plate and Film Company, of Rochester, N. Y., have also made great improvements, not only in the preparation of films, but also in the mechanical arrangements for exposing them. The "roller" slide of this company—a piece of apparatus by which a continuous band of tissue can be manipulated—is a marvel of constructive perfection; and though the principle is upwards of thirty years old, this instrument is the first to thoroughly fulfill requirements. Messrs. Morgan & Kidd (No. 2227) also exhibit specimens of paper-negative work.

One other recent advance in negative work should be alluded to, namely, the system of "isochromatic" or "orthochromatic" photography, by which the colors of objects are rendered in monochrome in truer relation to their respective appearance to the eye. Many years since, Draper, Waterhouse, Carey Lea, and Vogel pointed out that photographic films might be rendered more or less sensitive to certain colors by increasing or decreasing their power of absorbing rays of the particular color; but it is only comparatively recently that Attout-Tailfer and Clayton in France, Vogel in Germany, Warnerke in England, and Ives in America, have availed themselves practically of the fact. Tailfer and Clayton, as well as Warnerke, exhibit interesting examples of their respective methods.

Turning now to the printing processes, the first in chronological order is the carbon process of Swan, known generally under the title of autotype. This is based on the discovery of Poitevin of the sensitiveness to light of a mixture of gelatine and bichromate of potash, or similar salt of chromium. Fargier, Pouncy, Blair and others experimented with films of colored gelatine rendered sensitive to light by means of chromic salts, and which, after exposure, were treated with warm water to dissolve the portions unacted upon, leaving a picture in insoluble gelatine attached to the paper or other support. The chief difficulty experienced was in obtaining half-tone, since upon exposure to light under a negative, the surface of the gelatine layer was rendered insoluble, and so imprisoned beneath it that portion which remained soluble; consequently, except for black and white subjects, the process was long impracticable. In 1864, however, J. W. Swan patented a practicable method by which such a layer—bichromated gelatine—could, after exposure to light, be developed from the back or under side; this was effected by cementing the "tissue" temporarily, after exposure, to a plate of glass or metal, and by means of hot water dissolving away the under layer of soluble gelatine, and with it the original support. The resulting picture could be allowed to remain upon the surface on which it was developed, or transferred to a second sheet of paper. Subsequent improvements, by Johnson, Sawyer and others, gradually brought the process to its high degree of perfection, as shown in the exhibits in Groups XXVI and XXIX.

In connection with this process, an interesting exhibit by E. W. Foxlee (No. 2277) shows in a graphic form the effects of what has been termed the "continuating" action of light on carbon tissue. It was discovered that if insolated carbon tissue be kept in the dark for any length of time before development, the action of light went on in the same manner as, though in a less degree than, if a longer exposure to light had been given; in fact, that light might be economized by storing the tissue away for a few hours before development. Conflicting opinions were expressed on the subject, some authorities denying *in toto* the existence of any such effect, until the careful experiments of Foxlee demonstrated that the presence of moisture was absolutely essential to its production, and that it was accelerated by heat. The value of these observations, from an industrial point of view, removing as they do a considerable amount of uncertainty, can scarcely be overrated.

The next process that comes under notice is that known as Woodburytype, and which was the joint invention—though unknown to one another at the time—of W. B. Woodbury and J. W. Swan. In September, 1864, the former of these patented "an improved method of producing or obtaining, by the aid of photography, surfaces in relievo and intaglio upon aluminous, vitreous, metallic, or other suitable materials." In the following July the latter secured a patent for "improvements in the production of printing surfaces by photographic agency, and in obtaining prints therefrom," this being apparently the first mention of this method of printing, the production of the mold being the same, or nearly so, in both cases. A layer of bichromatized gelatine of sufficient thickness is prepared, and, after exposure to light under a negative, is developed upon a suitable support, as in the carbon or autotype process. The result will be a "mold" in gelatine in which the shadows of the original stand in relief, while the high lights form depressions. From this mold a reverse is taken, either by electrotype or by pressing it into a sheet of soft metal, and this forms the printing surface. The ink consists of colored gelatine, a small quantity of which is poured on to the intaglio, previously rubbed with an oily rag, a sheet of paper superposed, and the platen of a suitable press brought down, by which the superfluous ink is squeezed out, leaving a cast of colored gelatine in the hollows of the intaglio. This adheres to the paper, and, when dry, forms a picture in perfect half-tone. The process has been brought to a high degree of perfection by the Woodbury Permanent Photographic Printing Company, at whose stall, No. 2260, examples of the various applications of the process are shown.

A simplification of the mode of preparing the printing mold is shown by Messrs. Woodbury, Treadaway & Co., No. 2258, in which the gelatine relief itself forms the printing surface, being "faced" with tin-foil in order to prepare it to receive the ink. This process, to which the name "Stannotype" is given, is useful for small numbers, but does not offer the same facilities for large production that the older process does. The printing is identical with the "Woodbury" method.

Another valuable addition to the list of printing methods is Willis's platinotype process, which is demonstrated by the Platinotpye Company at their stall, No. 2261. In this process the picture is composed of the metallic platinum in a fine state of division, in consequence of which an image of almost absolute permanence is secured, the most powerful reagents, with the exception of *aqua regia*, having no action upon it. Paper is prepared with a solution containing ferric oxalate and a platinum salt; upon exposure to light, the ferric salt becomes reduced to the ferrous state which dissolved in potassic oxalate is a powerful reducing agent in connection with metallic salts. An image is formed in insoluble ferrous oxalate, which, so long as it remains in that state, exerts no effect upon the platinum salt in contact with it; but the instant the print is wetted with a hot solution of potassium oxalate, which is a solvent of the ferrous salt, the latter acts upon the platinum salt, and reduces it *in situ* to the metallic state, forming a rich black image of great beauty. Amongst the specimens exhibited by the company, a number of reproductions of works of art by Mr. J. Thomson show the suitability of the process in the rendering of the most exquisitely delicate subjects.

The newest departure in printing consists in the recent introduction of gelatino-chloride of silver paper, or paper prepared with an emulsion of chloride of silver in gelatine. Developed with ferrous oxalate or citrate, or with Mr. Arnold Spiller's hydroxylamine, it is capable of giving results scarcely distinguishable from albumenized silver prints, and with but a few seconds' exposure to light. Very fine examples are shown by Marion & Co., Warnerke, and Morgan & Kidd, but the process is still on its trial.

A. L. Henderson (No. 2229) and Count Ostrorog Walery (No. 2265) exhibit fine specimens of ceramic work, one of the most beautiful and permanent processes, the picture being burnt in upon a suitable enamel surface.

Of photo-mechanical printing processes in Group XXVI, there is a good and representative show in every branch except photogravure, which is conspicuous by its absence. Dallas, at stall No. 2023, exhibits specimens of dallastype and dallastint, modifications of the photo-galvanographic process, worked formerly by Pretsch and himself. The Meisenbach Company show examples of their surface blocks for printing with type, in which an artificial half-tone is secured by breaking up the gradation by means of a series of dots or lines. A novel feature in connection with this style of process is found in the American section, where Ives, of Philadelphia, exhibits the latest development of the surface block process. In this a swelled gelatine relief is first produced from the photographic negative, and a cast in plaster taken from it.. A sheet of rubber, the surface of which consists of a series of minute pyramidal projections, is inked and pressed into the plaster cast, and from this last an impression is taken, which is transferred to zinc to form a "resist" in the etching process. Sprague & Co. exhibit the working of their process of photo-lithography, in which the "grain" is produced by chemical means upon a gelatine surface, from which a transfer is made on to an ordinary stone.

The collection of apparatus, though complete in its way, and comprising all that is new, is somewhat disappointing, since the different exhibits present a sameness which destroys the general effect. The cabinet work in general is of considerable excellence, notably the exhibits of Hare, Rouch, Sands & Hunter, Marion & Co., and Collins, but there is little that calls for special notice. The same may be said in every department of the mechanical portion of the collection; while a vast amount of ingenuity and inventive power have been brought into play to meet the requirements of photography, there is nothing amongst the results that can be singled out as possessing super-excellence.

It would not be right to close this brief notice without calling attention to Mr. A. A. Common's remarkable examples of astro-photography, in the production of which the marvelous facilities afforded by modern processes have been supplemented by an unusal degree of perseverance and manipulative skill. Professor Hartley's labors, in photographing on an extensive scale the spectra of various metals, form another instance of valuable work performed in connection with a most difficult branch of science. The exhibits of these two gentlemen deserve most careful study.

THE PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

THE regular monthly meeting of the Philadelphia Amateur Photographic Club was held on Monday evening, March 21, 1887, at the rooms, 907 Filbert street.

President HAINES called the meeting to order at 8.30 P. M., 16 members and 3 visitors being present.

The minutes of the previous meeting being read and approved, Mr. P. P. Chase read the report of the Executive Committee, showing the receipts of lantern exhibition last month (as far as collected) to be $85.25. Arrangements were in progress also for a lecture on Composition to be given at the next meeting of the club.

Mr. F. A. Cunningham presented a report of the Committee on Incorporation, showing that a charter was granted the club by Court of Common Pleas No. 1, on February 12th last.

The Directors of the new organization are Messrs. William A. Haines, S. S. Chase, H. P. Gillingham, Alfred Thompson, William Super, Jr., Alfred Clements, Horace G. Philips, Edward Bromfield, F. A. Cunningham, F. G. Stuart, W. W. Randall, and S. D. Hopkins.

The committee were discharged with thanks by the club, and the bills for expenses incurred in procuring charter ordered paid.

On motion of Mr. Cunningham, the old association disbanded and the new organization was formed.

A recess was then taken to witness a descriptive exhibition of lantern slides given by Mr. Emlen Carolus. After being introduced by the President, Mr. Carolus congratulated the members on possessing a fine oxy-hydrogen lantern and showed a great many advantages in exhibiting slides by this method.

After showing some pictures taken ten years ago by the old process, some of which required exposures which would be now considered nonsensical, a number of slides were shown which were made on the B. H. & C. dry collodion plate, consisting of views of the Wissahicon valley, scenes in the Park, and also well known views near Reading, Chester, and neighborhood. Probably the most interesting slides shown were those taken in the Zoological Gardens of animals in motion, which were highly commended.

Mr. Carolus explained the different tones and had specimens of almost every variety; the close imitation of natural color especially noticed in the instantaneous views of animals, and also in the landscapes, together with the very marked translucent effect in the shadows proved very clearly that a great many pleasing effects can be produced by the careful development of transparencies.

The exhibition was exceedingly interesting, and was highly appreciated by the members present.

After a vote of thanks to Mr. Carolus the meeting adjourned.

ALFRED THOMPSON,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, FEBRUARY 8, 1887.

(*Continued.*)

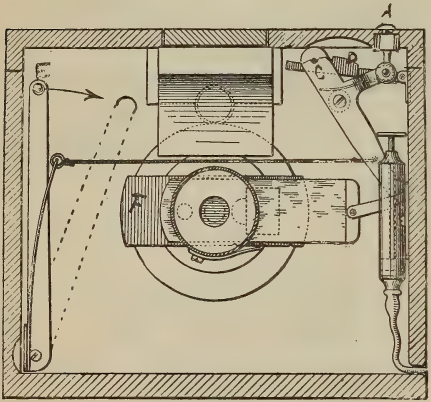
MR. GRANGER then passed the picture around, which was examined with much interest. The vignetting had been so cleverly done that the picture was as if it had been taken on one negative.

The *President*—I also received a communication from Mr. Davis, the Chairman of the Camera Club of Montreal, Canada, and among other things he extends a very cordial invitation to the members of this Society to come up to Montreal and enjoy the great carnival which is to take place this week, and he says that he will afford excellent facilities to any members desiring to go there, the rooms of the club being close to the ice castle and ice bridge.

The *President* then spoke of test exhibitions for lantern slides to be held on Friday evenings, February 11th and 18th, also the third winter lantern exhibition, to occur on February 23d, and desired members to contribute slides for it. On March 8th, Mr. George M. Hopkins would give some experiments on "light," using the micro-polariscope.

He then called attention to the exhibition of March 26th, to run from March 26th to April 2d, stating that several fine exhibits from amateurs in England would be sent, and he wanted to have the members of this society, as many as possible, prepare specimen pictures for the occasion; and as the expenses would be very heavy for such a young society as ours, something in the neighborhood of $500 (we have to pay $300 for the use of the hall), he expected each member would want a season ticket, which would admit a person at any time to the exhibition during the week, and the committee wanted to sell as many of these single tickets in advance as possible.

The *Secretary* will now read the names of members who have been elected.



Cross Section of Tisdell Camera.

The *Secretary*—The active members elected are: J. F. D. Lanier, Joseph X. Arosemena, Albert D. Vail, Franklin M. Jones, James H. Goodsell, and Dr. Robert H. Lamborn.

The associate members are: Mrs. Dr. Willard Parker, Miss Alice Jerome and William J. Yates. And Mr. Thomas Mansell as corresponding member.

The *President*—I also have a photograph here taken by Mr. Daniel P. Read, by gas-light; exposure of twenty-five minutes I believe. I thought perhaps it would be interesting to some of the members to see what can be done in that direction.

The next object of interest is an improved detective camera invented by Mr. Tisdell. It somewhat resembles in outward appearance the Parsell camera which was shown here some time ago, and is provided with a shutter sliding horizontally between the basis adjacent to the diaphragm plate. The diaphragm plate contains the different sized diaphragmatic apertures, and is slid laterally in front of the shutter according as a large or small aperture may be desired.

The diagram shows still more clearly the working parts. *F* is the sliding diaphragm-plate previously alluded to. The shutter behind it has a rectangular aperture (shown in dotted lines) which, as it passes through the lens, makes the exposure. From one end of the shutter extends a flat connecting rod to the long end of the pivoted lever *C*. On the upper end and front face of the latter is a pin which engages in peculiar arch-shaped release plate *D*, hinged near the end adjacent to the interior of the case, and held upward by a light flat steel spring not shown. The plate has special shaped notches cut in its upper edge for the purpose of tripping and stopping the movement of the lever *C*, adapted for holding the shutter in position when focusing and when making a time exposure.

The release plate *D* is operated from the exterior of the box by a spring button *A* at the corner, and also by the pneumatic piston attached to the right hand side of the box. The piston rod has a peculiar flat plate soldered to its end which strikes against a miniature roller on the release lever (not plainly shown), the object being to diminish the friction, when the piston presses against the release lever. The lever *C* is connected by a wire extending above the lens to the flat steel tension spring attached to the lever *E*. The position of all the parts shows the shutter ready to be sprung, with the spring on *E* fixed at its highest tension. When the pivoted lever *E* is moved to the right in the direction of the arrow the tension on the shutter is released, permitting the same to operate more slowly. Above the lens is located the usual finder.

This [referring to another style of camera] is a less expensive one and is another form. It has a similar shutter, but without the pneumatic arrangement. This has a peculiar holder. It is an improvement on the Barnet holder. Mr. Tisdell has found it is necessary to cover these holders on the edge with billiard cloth in order to be sure to have them light-tight. He says that when they are constructed in this way you can take them in the strongest sunlight and there is no danger of fogging. It is very important in this kind of work where a plate receives the most rapid exposure.

The next matter of interest this evening will be a demonstration which we propose to give on enlarging. I have written a few suggestions in regard to it, which, with your permission I will undertake to read.

[See page 143 for Mr. Beach's paper on "Enlarging on Bromide Paper."]

Dr. PIFFARD—Do you think you get better results by artificial light than by daylight?

The *President*—I don't know that you do. I only suggest that when you cannot enlarge in daytime, it is better to use the artificial light.

Dr. PIFFARD—We have clear Sundays sometimes, and those [passing a few pictures around] were made by daylight. One of them is a little under-exposed, but the others are all right.

The *President*—Where the negative is pointed to the blue north sky, and everything is inclosed in one large camera, as we have it arranged upstairs, or where you have the instruments at hand, that is much the nicest way to do—but if you haven't those instruments, the next best thing is to use the simple cameras and tools which you have. In connection with this apparatus [pointing to the kerosene lamp arrangement] it is not necessary to have the kerosene light at all, provided you can conveniently employ daylight. You can have the negative illuminated from the window of a room, and have the window all stopped up by a curtain—all that portion of the window not occupied by the negative. You can make an exposure that way as perfectly as you can by a kerosene light and with much less trouble.

The engravings on next page show the general arrangement for enlarging with a kerosene light. In Fig. 1 we see the operator vignetting the picture, which is thrown upon the pivoted focusing board.

Fig. 2 shows the position of the ground glass at the rear of the negative, also the arrangement of the light and reflector.

It is essential that the light be located exactly in line with the lens.

In Fig. 3 the focusing screen is shown folded up. The image is first focused on the ground glass set in the face of the board, and then the latter is rotated around, bringing the solid board in position to support the sensitive paper.

[The lights were turned down and an exposure was made of about five seconds, by the lime light of the lantern, on paper attached to the Eastman easel, which had been set up in position, the B paper being used. Mr. R. D. Gray, assisted by Mr. Baker, then developed the 18 x 22 enlargement, but it was found to have been slightly over-exposed. A shorter exposure was again made, producing a better result. After the development of the second enlargement, the meeting reconvened, and Dr. Janeway took the chair.]

Dr. JANEWAY—There are two questions still in the hands of the Question Box Committee which we desire to discuss to-night. The first is: "*Is it desirable that there should be some uniform system in making up developers; if so, should the ounce always represent* 480 *grains, the water to represent a uniform quantity, or would it be better to use saturated solutions.*"

In order to start this question, I will trouble you for a few moments by reading a few hints which have occurred to me [See page 179 for Dr. Janeway's paper]. I will call for some remarks from Mr. Roosevelt, as the questions were his.

Mr. ROOSEVELT—I have thought that this organization represented something of the constituents of the developer; that there was a good deal of learning in this body, but, like the pyro in the developer, it was rather a restrainer than any great assistance to us. It wanted an accelerator, and that I was the accelerator, and brought it out.

Now the paper that the Doctor has just read is the most valuable paper on developers I have ever listened to, and when he proposed that I should keep that question box full of questions, and he answers them so admirably, I have carried out my part of the bargain. The matter which he has stated so very clearly to-night was worrying my brains to find out what I was using in the developer. Not being educated as a chemist or doctor, I had trouble with it. In the first place some gentlemen are in the habit of calling an ounce 437½ grains, and how was I to divide that 437½ grains by anything on the face of the earth in order to get it down to an ounce of developer when mixed with anywhere from 10 ounces to 150 ounces of water.

That led to the second part of my proposition, whether we should not call it 480 grains. You can divide that into 48, 24, 12, 6 or down to 3, and get something of a conclusion. As the Doctor has just stated, there has always been a frightful difference in the amount of pyro put in an ounce of the developer. One formula would tell you to put in ten grains, and the next would say put in two grains. I knew that pyro brought out the contrast and was a restrainer under certain circumstances; but what I obtained as a distinction between the ten grains and the two grains was beyond my power to judge.

The suggestions he has made to-night concerning saturated solutions, I think disposes of them, and brings us down to the question of the number of grains in the various formulas. Mr. Ripley—and I am glad to see that he is here to-night—has advised three grains of pyro to the ounce, fifteen grains sulphite soda, and nine grains carbonate potash; then he says, "if you want a strong contrast, double the No. 1 and No. 2." This morning I had one of those eccentric experiences which Mr. Walker referred to the other night in that sarcastic way of his (laughter). I took a copy of a picture in my room, and, it being a dark day, gave it plenty of time, allowed fifteen minutes' exposure, and obtained quite

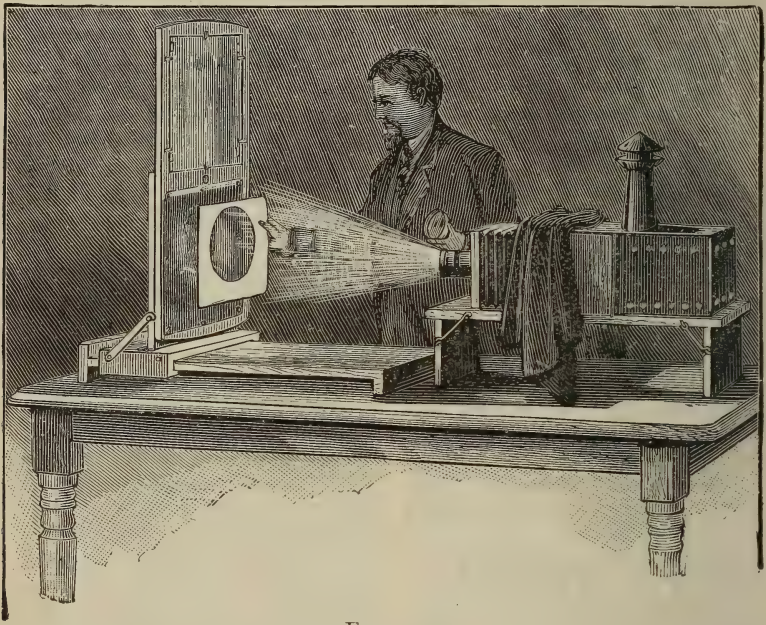


FIG. 1.

ENLARGING APPARATUS ADAPTED TO AN ORDINARY CAMERA.—VIGNETTING.

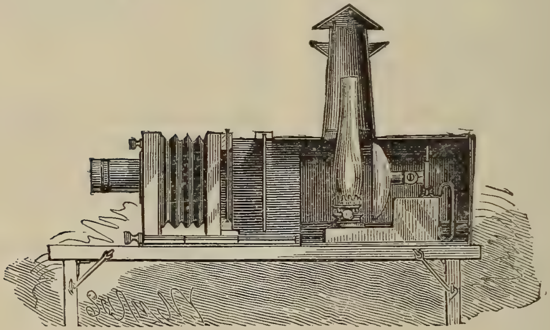


FIG. 2.

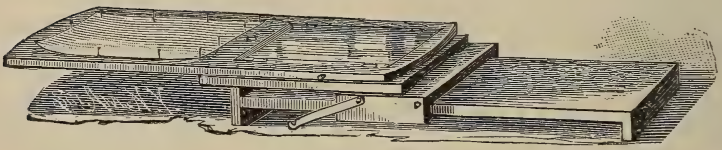


FIG. 3.

a thin negative, with rather slow development. I then went back, and taking two plates, exposed one five minutes and the other half an hour, and although I put it in the double developer, both are feeble, and I could not tell which is the better of the two.

Dr. Piffard—The method which you have given for constructing these formulas reads nery nicely on paper, but it will not work practically, and here is something for Mr. Roosevelt. I think if he undertakes to make up ten ounces of sulphite soda—ten grains to the ounce, he cannot get the proper weights together inside of ten minutes; he will have to sit down, take a piece of paper and figure up.

Mr. Roosevelt—Ten grains to the ounce?

Dr. Piffard—I want you to figure it out.

Mr. Roosevelt—Are you asking me to figure it out?

Dr. Piffard—I am asking you what weights you are going to use to make up a weight of 80 grains to the ounce.

A *Member*—It is not fair to put a mathematical proposition to Mr. Roosevelt.

Mr. Roosevelt—I give it up Doctor; do it yourself.

Dr. Piffard—That is where the thing won't work; but a way that will work, and works everywhere except in this country and in England—and works here with the most scientific photographers, and men who are devoted to science as well as to photography—is the use of the metric system.

Mr. Roosevelt—That is a frightful system. I tried that and could not do anything with it; a chemist or a doctor can perhaps, but an ordinary photographer cannot convert grams into grains. What pleased me so much with Mr. Ripley's formula was that I could understand it and could convert it into practical use It is ten ounces water, and you have something that you can work on; then he uses 480 grains to the ounce, and you know what you are dealing with; you can find out from this formula what you are using and what you are doing. It was with a view to correcting these difficulties which amateur photographers meet with, that I suggested this question. It ought not to be necessary that we should have to stop to ascertain the number of grains each time, but that we should have a formula arranged for us made up that we could know what is in it.

There is another point I want to propose to some of you gentlemen who are scientific. Whether you could not separate each one of these articles; whether it would not be practicable to have your sulphite soda in one bottle, telling you exactly how much you wanted to use; your pyro in another, with the preservative if necessary; your carbonate in another; and your bromide in another.

Dr. Janeway—Is there any other gentleman who wishes to say anything upon the subject?

Mr. Ripley—*Mr. Chairman:* My name has already been taken in vain in this matter, and there have been assertions of opinion here to-night which I can hardly agree with, but I will not commence to find fault.

The Doctor's recommendation in regard to the 437½ grains to the ounce, I cannot say I agree with. The fluid ounce is divided into 480 minims, and if our chemicals are weighed by the standard of 480 grains to the ounce, we can make up our solutions to any strength we choose. We know if we dissolve an ounce of pyro containing 480 grains in ten ounces of water, that every ten minims of water contains one grain of pyro, and it is very easy to measure the developer, so that, no matter how much we mix, we know exactly how many grains of pyro we have, and exactly how much of every other chemical we use.

In regard to the standard of weight I am most certainly in favor—if it could be used—of the metric system. There is no system so easily worked, or so quickly calculated, but it would be impossible at present to adopt it, because all our formulas are given on some other basis. I think that while our drugs and chemicals are dispensed according to the standard of 480 grains to the ounce, the natural inference is—and I believe it is so recognized by all scientific works where the ounces are specified in handling the drugs—it means 480 grains; but as there seems to be some question about it, every formula that is given should specify what ounce is meant.

Mr. Roosevelt spoke of the use of the sulphite. Sulphite has been said to have various effects, but its principal use and effect in the developer is the preservation of the pyro. You will remember that almost all formulas that are at all complete specify the use of a neutral or slightly acid sulphite of soda, and that "slightly acid" means an excess of the acid composing the salt, and the object of the addition of the other acids, such as sulphuric acid and citric acid, is to combine with the base of the sulphite of soda, and to release some of the sulphurous acid which preserves the pyro from oxidation, and so it gives you a solution of pyro which will keep for quite a length of time; it depends on how pure your chemicals are.

In regard to Mr. Roosevelt's questioning my directions, he only quotes part of them, and it is hardly fair. If you will notice in my little essay, after I had given my directions for compounding and using the developer, I spoke of the various functions of the chemicals used, and said that the pyro is the developer and that the alkali is the motive power, and I called particular attention to the fact that it is necessary to use your judgment in the compounding of your developer, being guided by the supposed exposure you have given. If you have given an over-exposure I certainly should not use a concentrated developer—concentrated in motive power for producing density—because it would act contrarily.

I have said, if you remember the wording of my formula, that adding the double strength developer is suggested after the use of a weak developer in order to intensify and bring out and strengthen the details you have obtained by a weak developer.

Mr. ROOSEVELT—That is the way I used it, but I don't know whether my exposure was short or what it was, but I only tried to get something out of that picture.

Mr. RIPLEY—This matter of over and under-exposure does not seem to be thoroughly understood by every one. I find in an under-exposed plate the development, especially of the high lights, commences and proceeds quickly; on the contrary, an over-exposure works more slowly than an under exposure. I have so over-exposed a plate as to prevent it being developed at all. I have put it in the sunlight and then put it in the developer, and it came out quite slowly. The image could be seen on the plate before development. In a properly exposed picture the high lights come out first and the shadows remain, and there is that delicious creaminess which we all desire to get, and which only good plates give, and the detail finally comes out. And while the development is proceeding we can see whether we are going to have too much contrast, and if so, we regulate the developer accordingly. My procedure is to strengthen the developer with water, which enables the high lights to come out before they get too intense.

Mr. ROOSEVELT—I did not mean to question the propriety of your directions, Mr. Ripley, it was only to show the peculiar results I reached by trying the two extremes.

Dr. PIFFARD—I referred to dispensing; but, Mr. Vice-President, it is clear from what I have heard already to-night, that there is a good deal of discrepancy in the weights and measures in use in this country.

In your paper you alluded to one point, and that is that in translating any one formula, it must be borne in mind that an English pint contains four ounces more than an American pint; that is true, but you omitted to state that the English fluid ounce weighs 437½ grains, while the United States measure weighs 480 grains, and when druggists buy their drugs from the wholesale, they buy, as a rule, by avoirdupois, but when they dispense their drugs in prescriptions they dispense, as they are compelled to do by law, by Troy weight, which is 480 grains. Pyro, and most of the chemicals that we, as photographers buy, are put up by avoirdupois weight almost invariably. The pyro, if you weigh it, you will find it varies, and that the packages run from 437½ grains to 480 grains; that has been my experience with it. They really give you more than they agree to give you. All they agree to give you is the ounce avoirdupois.

One of the curiosities of the weights we are using every day may be illustrated by the fact that an ounce of gold weighs more than an ounce of iron, and a pound of iron weighs more than a pound of gold.

I find that a man of ordinary intelligence will learn the metric system thoroughly in half an hour, and I have seen men all the way from 35 years to 70 years of age who have never yet learned the system of weights which we now have in use.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—R. A. writes: Will you kindly inform me, through your columns, what kind and size of lens will work the most rapidly with perfect definition for making solar prints 18 x 22 to 22 x 36 from 8 x 10 negatives? I am optician enough to devise my own illuminator. Can procure to advantage a Voigtlander No. 9, 6¼ inches in diameter, 20 inches back focus, probably 28 or 30 from diaphragm, but the size will necessarily render the apparatus rather unwieldy. How long focus is necessary in a lens of similar angular aperture to give perfect definition for the purpose above stated? Would a specially constructed solar camera objective be much better? Great rapidity is necessary for my purpose, the requisites for which I can manage if you will please advise me as to the above instrument. Shall I use it or can I do better?

A.—The best lens for projections, either in throwing slides on a screen, or for making enlargements, is a ⅓ or ½ portrait lens with central stop. The ⅓ having an equivalent focus about eight inches is preferred. The longer the focus of the lens, the greater the distance necessary to produce a given size picture. It is well known that the longer the distance the light has to travel, the more it loses in intensity; hence, the shorter the focus the quicker it will work with same aperture. As the angle is increased, so the diaphragm is diminished and time lengthened to produce sharpness, hence it is desirable to strike a medium and use a lens of neither large or small angle in order to work as quickly as possible, and experience has shown that a good ⅓ portrait lens, such as can be bought for $14.50, answers the purpose.

Q.—H. P. writes: I am a stranger in this country and will be glad if you will tell me whether I have to obtain a license to take and sell photographs in Virginia. If I need a license, do you know to whom I should apply for it?

A.—We do not know that any license is needed to make or sell photographs. You can obtain the information by application at any office of a Justice of the Peace in your town.

Q.—Some of our correspondents have written to us asking for the formula used by Mr. Hunter for toning the prints used in illustrating the BULLETIN. Mr. Hunter has very kindly given us his formula and writes:

A.—In compliance with the request of your correspondent, I send the formula. It is simple, and used by very many photographers. Care and judgment in the manipulation is very necessary to tone nicely with any formula

TONING BATH.

Take

Acetate soda	30 grains.
Table salt	40 "
Water	16 ounces.

When dissolved pour into toning dish and warm.

Take

Chloride gold	7½ grains.
Carbonate soda	45 "
Water	8 ounces.

When dissolved add it to the solution in toning dish, and neutralize with carbonate of soda until the solution feels slippery, or test with litmus paper. Sufficient for 10 to 12 sheets of paper.

Q.—M. R. J. writes: Please tell me, through the columns of the BULLETIN, how far apart should stereoscopic lenses be placed? Also how to trim the views? I use salicylic acid in my pyro and soda developer, which upon mixing used to turn a purple color, but of late turns yellow; what is the cause?

A.—Stereoscopic lenses should be 3⅝ to 3¾ inches from center to center. Cut the prints so that the center of each is opposite to the center of the lens, and in mounting reverse them right and left. If your salicylic acid made your pyro developer purple we think it must have been impure; yellow is all right.

Q.—D. T. G. writes: Please inform me, through the inquiries of the BULLETIN, about the following: What is meant by the focal length of a lens? 2. Will any slow emulsion make transparencies or positives? 3. Can you use a pyro and potash developer for transparencies? If so, can you get a strong black tone or a warm brown tone, or does that have to be done with the oxalate? If you will give me answers to my questions it will greatly oblige.

A.—The focal length of a lens is the distance the ground glass should be placed from lens to obtain an image of a distant object. If the measurement is from the back of the lens it is called the back focus. Slow emulsions are always best to make transparencies or positives. Yes, you can use pyro and potash for transparencies, but they are not so easily managed as ferrous oxalate; see Beach's article on page 49 of BULLETIN, January 22, 1887.

Views Caught with the Drop Shutter.

CALVIN C. KELSEY, some time prominent in the photographic stock business, committed suicide by jumping from the roof of 130 Flatbush avenue, Brooklyn, at about 6 o'clock in the morning on March 31st last. He had been in poor health and was subject to nervous and mental troubles.

THE PHOTOGRAPHERS' ASSOCIATION OF CANADA have issued a large maroon card (8 x 10) with gilt printing, to be set up in the studio, calling the attention of the public to the following facts in regard to low prices, and what they lead to. "1. Lowering of the artistic standard of the work. 2. The almost necessary use of cheap materials and accessories. 3. The employment of cheap assistance. 4. The prevention of sufficient time and care being given to the details of the work room. All of which tends to reduce the permanence, and consequently the real value of photographs to our patrons."

We sincerely hope this card will be much used and have the effect of raising the standard of photographic work in many sections of the country.

THE PROSCH MANUFACTURING COMPANY have recently constructed a shutter to be used in taking pictures of the projectile fired from the dynamite gun. It is fitted to be released by electricity and the attachment was suggested by Captain W. F. Randolph. It can also be operated in the ordinary manner. The whole affair is very ingenious and interested us very much.

HIRAM J. THOMPSON, of Wabash avenue, Chicago, sent us his recent price list, filled with all the latest forms of apparatus and accessories for the practice of our art.

A ONE HUNDRED DOLLAR PRIZE.

THE Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co., $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

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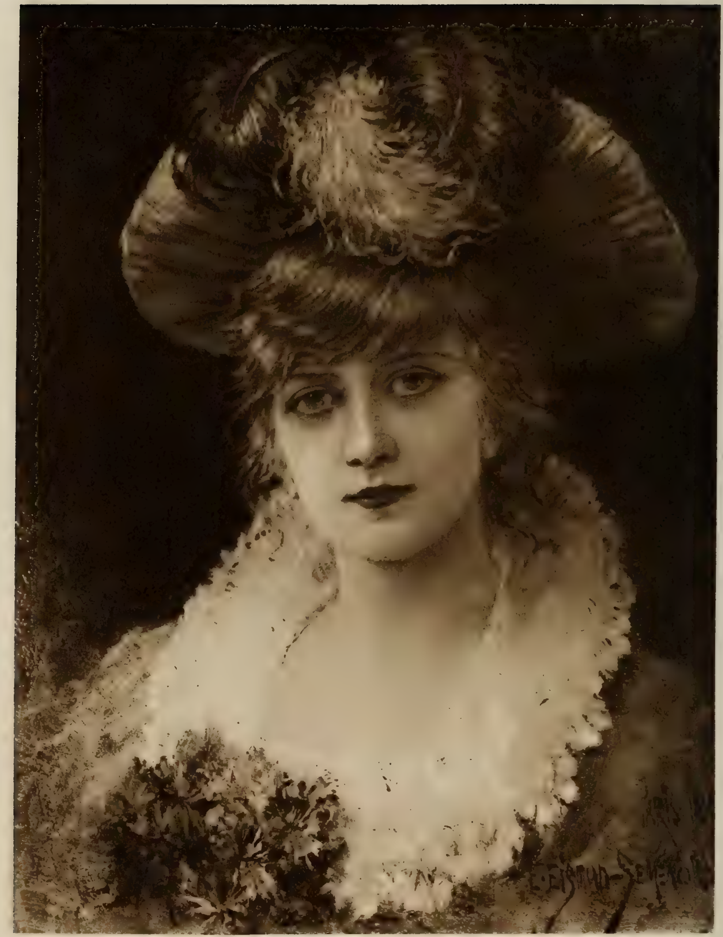

ISO-CHROMATIC PHOTO-GRAVURE.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

APRIL 23, 1887. Vol. XVIII.—No. 8.

THE ACTION OF LIGHT ON PHOTOGRAPHIC PLATES.

Some time ago we had occasion to discuss in these columns the action of light in relation to the development of the photographic image, and called attention to the fact that the force used in the developer should be proportioned to the amount of energy previously exerted by the light rays in falling upon the sensitive surface. These thoughts were suggested from our experience in developing instantaneous exposures of various degrees of rapidity, and a comparison of the different amounts of chemical reagents that are necessary to bring out the images produced by short or prolonged action of light upon the photographic plates. Our ideas have had a very strong confirmation in some experiments recently made, and published in our French exchanges. Two of our French photographic brethren, Auguste and Louis Lumière, have been working upon the effect of exceedingly rapid exposures upon dry plates in relation to their developability. Starting with a short exposure and gradually diminishing the time, a point is attained where the impression made by the light rays is so small that an image cannot be developed. Of course the limit attained will depend upon the lighting of the subject, the sensitiveness of the plates, and the rapidity of action of the lens used. The experimenters above mentioned attributed this result—the failure to obtain a developable impression—to two things: 1. The extinction of the action of the light on sensitive substances when below a certain minimum value. 2. Lack of force in the developer.

To test the question and see if a latent image existed on the sensitive surface, no matter how short a time of exposure, the Messrs. Lumière constructed an apparatus specially designed to the purpose. A disk was attached to some clock-work, which imparted to it a rotary motion, variable within certain limits. An isochronous regulator was also used to secure uniformity of rotation during each set of experiments. This rotary disk had a sector cut out of it in such a manner that the angle could be varied at will, and it was interposed in the path of a beam of parallel rays from a light source of constant intensity, thus acting the part of a photographic shutter with a variable aperture. The sensitive plates used for the experiment were placed in a camera to which the rotating shutter was attached. Before starting the clock-work to rotate the disk of the

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shutter, one-half of a gelatino-bromide plate was exposed through the sector for a given time, say three seconds, which was measured exactly. The clock-work was now started, and the other half of the plate was exposed, by means of the rotating disk, to the action of light at intervals of $\frac{1}{10}$ to $\frac{1}{30}$ of a second, with exposures of $\frac{1}{1000}$, $\frac{1}{2000}$ or $\frac{1}{4000}$ of a second, according to the angle at which the sector opening of the disk was set; while the total of these times of exposure was calculated to be equal to the three seconds, or whatever time was used upon the other half of the plate.

Now, if minute periods of exposure fail to produce an effect upon the sensitive surface, then any number of such exposures should not produce a developable impression; and only that half of the plate that had received the long (three seconds) exposure should give an image on development. But it was found that this was not the case, the two impressions being exactly equal in every case. These experiments were repeated in a great many ways: Changing the source of the light, varying the opening in the disk sector, and others; and in every case the sum of the minute interrupted exposures was always equal to that of the continuous one.

In some cases twenty-four thousand impressions were made upon a sensitive plate, which, with a weak light source, gave only a faint image; yet this image was identical with the image made by a continuous exposure equal to the sum of the interrupted impressions.

These experiments therefore prove that no matter how short the time of action of the light upon a photographic plate, it produces a change in the sensitive surface. Furthermore, the effect of the light is in proportion to the length of the exposure, and the lack of density in the image is due to want of force in the developer.

We have given our readers a complete *resume* of these interesting experiments, because they are at the very foundations of photography. A clear understanding of what the light does to the sensitive film may never be known, but every step that takes us nearer to the solution of the problem is worth noting and thinking over. And the first thought that strikes us at the present moment is: If these minute impressions of the light rays each has its effect, may not our most so-called non-actinic lights that we use in the dark room also have their effect upon our highly sensitive plates under prolonged development? It follows from what we have thus far learned that rapid exposures that require prolonged action of the developer to obtain an image should be kept as much as possible in darkness during the process, being examined from time to time to note the progress of the action.

In taking a large portrait direct, if a long focus lens be employed so that the camera can be placed a great distance from the sitter, there will be little or no distortion. The great mistake in taking large direct heads, as we have frequently pointed out, is that of using lenses of far too short a focus. In the old wet collodion days, lenses of large angular aperture were almost imperative, but it is not so now. Gelatine plates when employed with lenses of long focus and comparatively small aperture, require far less exposure than used to be necessary when the collodion process was worked even under its most favorable conditions. Large heads can now be taken direct without difficulty, and to all intents and purposes free from distortion, provided a lens be used of sufficiently long focus to permit of the camera being planted at a considerable distance from the sitter. —*British Journal of Photography.*

EDITORIAL NOTES.

In our note upon the pictures of "The Taming of the Shrew" in the last issue of the Bulletin, we failed to give credit to the Photogravure Company for their share of the work. The large pictures were made by this Company with the aid of the electric light for Messrs Harper Brothers, the well known publishers.

It is not often that our art journals will give photography credit for being useful to the artist. It is therefore very pleasant to read the following in the *Portfolio,* where it says that our art has encouraged drawing of an original kind in black and white, and "since photographic reproductions have been scattered abroad the public has been educated by them to a better appreciation of drawings and sketches generally."

MM. Bonfante and Massoneuve, of France, have been using the incandescent electric light for taking photographs of sunken vessels on the sea-bottom, and for other submarine work. The divers are supplied with the lights and cameras specially constructed for the purpose.

The photographers of London must have had a bad time for taking pictures on March 15th last. The light at noon is said to have been as bad as midnight and remained so for some hours. In consequence of the intense darkness the supply of gas ran short and much inconvenience was experienced in consequence.

We regret to hear that Professor John Tyndall, our former instructor, has been compelled to resign his position as President of the Royal Institution, London. We are exceeding sorry to hear this news, as we know of no man of science of recent times that has done so much for the development of the science of light, and his rescarches are of world-wide renown.

The Lowell Association of Amateur Photographers contemplate having an exhibition in the fall. At a recent meeting the subject was discussed and it was decided that an exhibition at the present time would not be advisable, the lateness of the season making it improbable that a good showing of the results of the association's work could be collected. In the fall some fine work is expected from its members.

The British Association for the Advancement of Science is to meet in Manchester on August 31st next, and Sir Henry E. Roscoe, the President, sends us a hearty invitation to be present. We tender our best thanks for the courtesy, but fear that the results of the meeting of the Photographers' Association in Chicago in the same month will need all our attention on this side of the Atlantic at that time. Should any of our readers be in England then, we recommend them to visit Manchester, and assure them a most hearty welcome by our English cousins.

We regret to hear that in the late dreadful railroad disaster at Forest Hills, Mr. E. H. Derham, of Boston, the well known expert in carbon printing lost his life. Mr. Derham was an Englishman, and a man noted for his pleasant manner and the readiness with which he would give others information on his favorite branch of photographic work. He was 38 years of age, and leaves a wife and two daughters to mourn his death.

The great International Congress of Astronomers now being held in Paris, promises to give us a chart of the heavens hitherto unattainable. The work of the Brothers Henry and Admiral Mouchez, of the Paris Observatory, in photographing stars invisible to the naked eye, has directed the attention of astronomers to the value of this method of research, and an organized system of obtaining a complete chart of the heavens by photography will soon be inaugurated.

The Pittsburgh Amateur Photographers' Society recently held their second annual exhibition, and the pictures were a source of pleasure to the friends of the members and a revelation in photography to Pittsburgh generally. Large numbers of the photographs were noted "as absolute gems in composition." A remarkable bit of art in the exhibition was a portrait of Mr. W. H. Lincoln —a transparency—taken by himself. Apparently the eyes in this picture are peacefully closed. Turning the glass slightly causes the eyes to open wide and clear, and in so life-like a way that the effect is, to say the least, startling. This result is caused by a skillful juxtaposition of two transparencies, in one of which is located the open eyes. The awards were as follows. Professionals: Best landscape, Mr. Histed; best single figure to Mr. B. L. H. Dabbs, for his photographs representing his daughter, Mrs. Philo French; in special compositions and groups, Mr. Thompson and Mr. Histed. To amateurs: Miss Edith Darlington and Messrs. W. J. Walker, L. S. Clarke, A. S. Murray, W. West Randall, G. T. Heisey, George Singer, Charles Davis, F. R. C. Perrine, T. K. Gray and G. A. Hays. The Committee of Arrangements was Messrs. Louis S. Clarke, R. F. Smyth and F. R. C. Perrine, who deserve a large share of credit for their able supervision of the exhibition.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

Introduction.

Of all materials known to chemistry, carbon is the most constant and resistent to the influences of temperature and the hygrometric changes of the atmosphere. Looking at old manuscripts, or old engravings, which were produced by writing or printing in carbon, we always find that the black characters and lines remain black, even if centuries have passed over them, the paper, parchment, or other supporting materials, meanwhile having faded or become yellow. Carbon having been employed as the essential coloring matter in all these, it has proved to be the desideratum for the production of photographic pictures. Even if the printing processes with silver salts have advanced much, it is well known that pictures produced in this way (and having been made with the utmost care) generally fade more or less in the course of years, even if they are protected against the light.

The strain laid upon photographers in consequence of competition, often, unfortunately, causes them not to be so careful and cautious as they ought and would like to be in the production of pictures; and, owing to these and other circumstances, it only too often happens that silver prints made by them sooner or later show signs of alteration. This is due to lack of care, to which they had to consent in order to make their business pay. Of course this is not always the case, for there are, fortunately, many photographers who, by their merits and conscientiousness, are in such a position as to be able to devote all their time and a special carefulness to the production of as really good and permanent work as possible, in order to maintain the high standing which they have been able to reach through their ability and the artistic class of work they turn out.

Now, as regards the carbon process there is the great truth which predominates over all, viz., that carbon pictures produced in the way already described by many authors, and practiced by a great number of well-known photographers and amateurs, are stable and not subject to any such influences as are dangerous to silver prints. There has often been made the apparently just remark by those who do not know the carbon process, that it is a so-called "blind" process, *i.e.*, it is in some way guess-work, or a process where the watching of the impression produced by the light on the sensible pigment cannot be seen, controlled, and modified. It has further been objected to this beautiful and interesting process, that it is too delicate and claims too much care and constant precautions in order to produce good prints.

But all these objections are made in a somewhat rash and inconsiderate manner, for science and intelligence have given us an auxiliary which, as far as caution and carefulness come into co-operation, supplies us with a contrivance more perspicacious than our own eye would be: the photometer or actinometer, which was invented expressly for this purpose. By means of this little contrivance, carbon printing is rendered really easy, and the worker readily becomes acquainted with its use, and soon acquires a security which in fact is surprising.

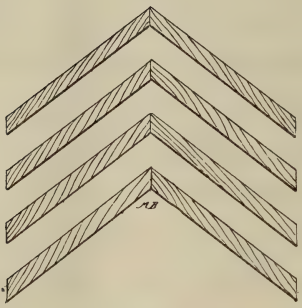
As far as precautions and carefulness are concerned, it is evident that any such process will claim its just portion; but considering that the silver printing process also claims them (the repeated washings of the prints, the gold toning bath, the elimination of the hypo, etc.), it is evident that the balance inclines towards the carbon process, so long as really permanent prints are desired.

The carbon process since it was invented has always been an interesting subject to scientific men, and when we look over its history we find the names of Poitevin, Regnault, Sutton, John Pouncy, Fargier, Swan, I. R. Johnson, Leon Vidal, Dr. Van Monckhoven, Bolas, Woodbury, Dr. Liesegang and others, who have all worked and made improvements upon it. Several treatises have been published, all containing valuable formulas and recommendations, but very few are written in such a detailed way as to enable a person to take up the carbon process and, book in hand, make it a success. The principal object of the present treatise is to enable any person to become a carbon printer, and special care has been taken to give all the instructions as clearly as possible; giving the formulas for the sensitizing baths, solutions, etc., plain and intelligible, in order to avoid to the utmost the chances of a bad result; and it is hoped in a manner that will enable any careful worker to follow up this process with not more trouble than attaches to any work of a similar kind.

WORK-ROOMS.

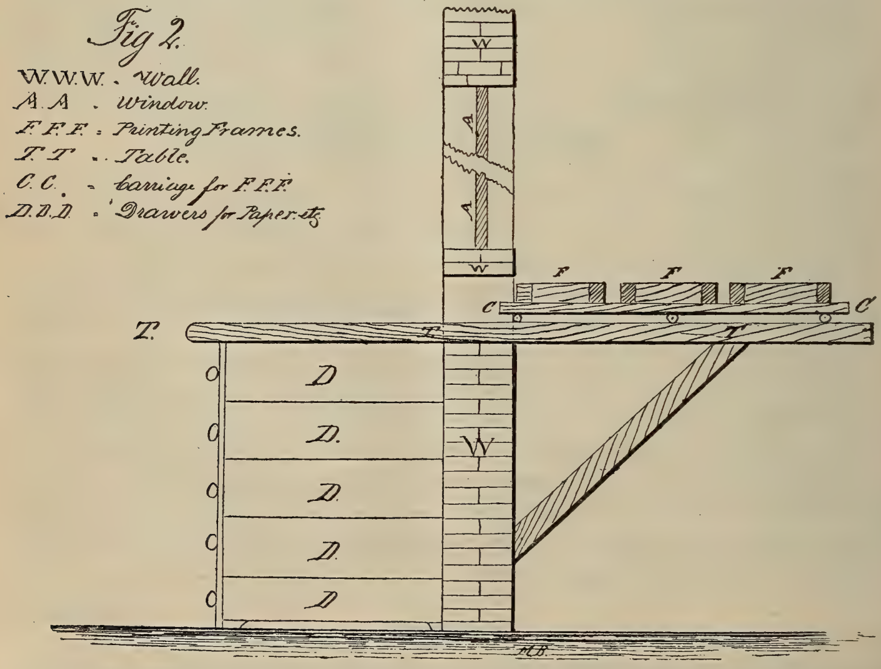
A dark room (yellow glass windows or yellow artificial light are sufficient) must be provided wherein to sensitize the carbon paper, and special care must be taken that it is well ventilated and not in too close proximity to a kitchen, stable, or water-closet. It is also necessary that it is a dry room, and that the floor be clean and not covered with a carpet. The screens for keeping off the actinic light ought by preference to be of dark smoked orange glass, combined with yellow (sunflower-color) tissue-paper when it is the intention to sensitize during the daytime. However, as will be seen in the Chapter on Sensitizing, it is not absolutely necessary to sensitize during the day, and it is even more convenient to do it in the evening, when a simple sperm candle is all that is wanted to conduct these operations.

Fig. 1.



For the production of large quantities of carbon prints on a large scale, there should be a dark room as described above. The late Dr. Van Monckhoven recommended a special contrivance, which at the same time gives a good and abundant light with perfect and convenient ventilation. It consists of double shutters, as in Fig. 1, painted inside and out with a yellow color, and having the angle uppermost. A window may be fitted to receive it. Mr. Sarony, of Scarborough, England, uses a very convenient arrangement, which will be easily understood by Fig. 2.

Fig 2.


W.W.W. - Wall.
A. A. - Window.
F. F. F. : Printing Frames.
T. T. - . Table.
C. C. - Carriage for F. F. F.
D. D. D. - Drawers for Paper etc.
W
A
A
W
F
F
F
C
C
T.
T
T
D
D.
D
D
D
W
AB.

The rooms for development, mounting and retouching do not claim any special preparations as regards light, for all these operations are conducted in daylight. There should, however, be provided communications with the main water-pipe and sink. It is good if the floor is covered with asphaltum, or has stone paving.

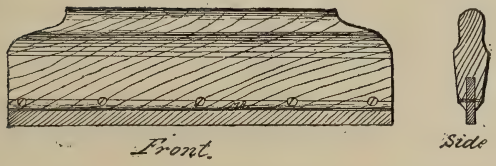
For amateurs these contrivances are not necessary, or should be greatly modified. The greater number are possessed of a dark room, and will easily be able to make such alterations as will be indicated hereafter. The above recommendations as regards light, ventilation, proximity of kitchens, stables or water-closets, etc., must be borne in mind. Those who do not possess a dark room will also be able to make carbon prints if they follow the indications given in the following pages.

APPARATUS.

Trays.—Four different classes of trays are wanted: for sensitizing, a reservoir tray, developing, and alum bath. Their size depends upon that of the plates used and the dimensions of the pictures desired. For 8 x 10 plates the dimensions of the trays ought to be as follows: Length, 11½ to 12 inches, breadth, 9½ to 10 inches, depth, 5 to 6 inches. For sensitizing and developing same length and breadth, but at least 10½ inches deep for the reservoir tray, and only 2 to 2½ inches for the alum bath. The 8 x 10 size for plates is very convenient, for it allows that two 5 x 8 or smaller sized pictures can be developed at the same time, thus simplifying the work very much. These trays should be made of stout sheet zinc, not of tinned iron. It is also very convenient to procure one larger tray, two to three inches longer and broader, and to use it, when the temperature in summer rises above 70 to 75 degrees F., as a cooling-bath for the sensitizing and transfer manipulations. If convenient, all these trays may be coated with a varnish made of asphaltum in benzine; however, it is not necessary.

Squeegee.—There should be at least two squeegees. They can be obtained ready made and of different sizes. It is easy to make them by proceeding as follows: Take a piece of wood say 8 by 3 by ¾ inches, and give it the form as in Fig. 3. Make a groove at the lower end, and place into it a piece of rubber-cloth, three or four-ply, the same length as the wood and about two inches in breadth; secure by means of some brass screws. Larger plates than 10 x 12 claim a squeegee of larger size. Mark one of them with a *B* and the other with a *T*, and use *B* only for the sensitizing of the paper and *T* for the transfers, as will be explained later on.

Fig. 3.



India-rubber Cloth.—Two pieces of this cloth should be provided. As regards size, they must be at least three inches larger every way than the plates for which they will be used. They must be kept clean, and it is best to use one for the sensitizing and provide it with a mark, say *B*, and reserve the other for the transfer, marking it *T*.

Folding Racks.—There should be three. They are cheap and can be obtained from any dealer in photographic materials.

Glass or Porcelain Plates.—These plates must be chosen according to the size of the pictures to be produced. It is also left open to decide whether ground or plain plates shall be used. Plain plates, glass or porcelain, produce pictures (by means of the double transfer) with a high gloss; ground plates give a matt surface. Beginners will do better in employing porcelain plates, which render it more easy to estimate the strength of the picture when developing. Large pictures, also transparencies, claim glass plates, for there is a difficulty to obtain large porcelain plates free from defects, and their cost is exceedingly high. Transparencies cannot be estimated sharply as regards their degree of development if they have been transferred to porcelain.

Collodion Bottle.—Cross' filtering and pouring bottle is a very convenient contrivance. It has the advantage that it is cheap and very handy, as no collodion but that which passes through the filter comes into use.

Funnels.—There ought to be two funnels, either glass or india rubber, and of convenient size, one to be used for sensitizing and the other for the alum bath; and, in order to avoid confusion, they should be marked, the former *B*, and the latter *A*, and should *only* be employed for the designed purpose.

Thermometer.—Either a so-called bath thermometer, or one mounted on glass, and with divisions in Fahrenheit and Centigrade degrees is necessary.

Heating contrivances.—For large quantities of work a so-called "Geyser" is recommended. It consists of a cylinder containing a spiral coil, and having an opening at the top for connection with the water-pipe, and a valve at the lower end. Underneath is a gas-burner. It heats the water very fast, and by regulating the burner and the valve of the water supply, any degree of heat can be given to the water. Amateurs will not require such an apparatus, as they will not want large quantities of hot water. It will be sufficient to procure a good single or double-wick "Summer Queen" kerosene stove and a water-kettle of convenient size. It is an absolute necessity to have a contrivance for heating water, for without hot water nothing can be done. The kettle should hold at least half a gallon; of course all depends on the scale of the work to be done.

Large establishments may be fitted out with some developing and washing trays of large dimensions; the former resting on a sort of cradle and being suspended at the center, are movable in the same manner as a see-saw. The water supplies, cold and hot, should be placed over them, and there may be also provided some roses, which are very useful to give a final wash to the plates; or, the roses from the hot water supply are used to clear up darker portions of the picture under development.

Printing Frames.—The same class of printing frames as are generally employed for silver prints may be used. There are however others made expressly for this process and which have no folding back, since there is no necessity to open the frames during the exposure to the light in order to see the progress made. The frames must be kept free from dust and as dry as possible. It is good to cut some pieces of impermeable paper or of rubber cloth and lay between the tissue-paper and the back plate of the printing frame. These pieces should be a little larger than the carbon tissue. Very handy and convenient are the printing presses invented by Mr. Sarony; they are too well known to require describing here.

Wood Clips.—About two dozen or more are wanted. They are cheap. The most convenient are those that have a hook on the upper end, by which they may be suspended on a rope or wire.

(*To be continued.*)

THE FIRST ANNUAL EXHIBITION OF PHOTOGRAPHS.

SECOND NOTICE.

Mr. P. H. Emerson, B.A., M.B. of Chiswick, England, obtained a diploma for his 8 x 10 studies. These included some platinotypes entitled "On the Bure," "Norfolk Dibes," "Sticklebacks" and others; also an autotype, "Gathering Water Lilies." They were all highly artistic, and the platinotypes showed much skill in the use of this beautiful process.

John E. Dumont, of Rochester, N. Y., had a number of fine studies, for which he was awarded a diploma. These were : "Solid Comfort," "The Clarionet Player," "Good Night," and "His Own Barber." It is needless to say that they were all fine examples of artistic photography, and, like all this exhibitor's work, worthy of the closest study. The lighting and posing of the figures, the beauty of the rich brown tones, and the general finish of the pictures in the frames, should serve as examples for some of the other exhibitors. Mr. Dumont's pictures always look well and show that he takes pains to complete his work in such a manner as to be attractive to those who view it.

Alfred Clements, of Philadelphia, had a number of exquisite platinotypes, which received a diploma. They were mostly 5 x 8 views of English and French scenery. They were all capital pictures, with much fine feeling in the choice of subject, and in every case gave evidence of the beauties of the places where they were taken. "In Lowestoft Harbor, East Coast, England," "A Woodland Fairy," "Normandy Cottage Door," "Old Houses at Candebec," were to us the gems of the exhibit.

Walter A. Clark, of New York, had a large number of instantaneous views around East Hampton and Eastport, to which a diploma was awarded. It is impossible to give any detailed description of the pictures, which were pretty, characteristic of the places where they were taken, and evidences of the skill of the exhibitor with shutter, lens and developer.

Franklin Harper, of New York, obtained a diploma for some of the finest interiors we have ever seen. The pictures of the parlor and library of the Berkshire Flats were excellent in every sense of the word, and when we compare them with some of the work of the same character from professional photographers, we are forced to admit that they are fully equal to it, and this without detracting in the least from the wonderful skill of our professional brethren.

C. W. Canfield, the Chairman of the Exhibition Committee, exhibited a number of flower studies in cyanotope, which obtained a diploma, and were certainly the finest blue prints we have seen for some time. This exhibitor appears to be uncommonly skillful with this process, and showed its wonderful capabilities in careful hands; for the particular class of studies chosen were admirably suited to cyanotype, and the roses were exquisite in the beauty of gradation of light and shade.

Dr. P. H. Mason, of Peekskill, N. Y., obtained a diploma for an enlargement on bromide paper, entitled "The Coaching Party," made from a 4¼ x 6½ negative. This was a group of children in a little wooden wagon drawn by a goat. The subject was an exceedingly interesting one, and the choice of background, an old wooden barn, gave the picture a rustic beauty that was much admired by all who saw it. This exhibitor also had a frame of views in and around Peekskill, which were testimonials of his fine taste as an artist and his skill in photography.

John Bartlett, of Philadelphia, obtained a diploma for eleven bromide enlargements. These pictures included a number of studies with children, entitled "Shopping," "A Hasty Pudding," "A Friendly Visit," etc., and were finely caught. The same exhibit also included a number of still-life pictures, "Chrysanthemums," "Pomona's Pearls," "Apples and Cider," "Good Cheer," "Autumn Fruits and Flowers," which in the manner of grouping and fine lighting to give artistic effects were extremely beautiful subjects.

George West & Sons, of Southsea, England, obtained a diploma for a number of their handsome yacht pictures. We have often noted the fine work of these exhibitors before, and the examples shown at this exhibition were fully up to their best efforts on former occasions. It is needless to enlarge upon the beauty of the pictures here exhibited; it is sufficient to say that the yacht pictures are unrivaled as examples of fine and artistic photographic work. The pictures of the Irex, and other sloop and schooner yachts, were admired by all who saw them; and the English man-of-war under full sail was a gem in every sense of the word; every sail and line of rigging being sharp and clear, and the graceful motion of the vessel being finely brought out.

J. G. Sinclair, of West Hartlepool, England, received a diploma for three of his fine 6½ x 8½ prints of English scenes and architectural studies. "Pont Aberglaslyn, N. Wales," "On the Derwent," "A Farm House," "Furness Abbey, Norman Arches," "Norden Church, 11th century," "Stybarron Crag, Ullswater," "Fairy Glen, N. Wales," were to us the gems of the collection; but the whole exhibit was fine in every respect, and full of artistic beauty.

We now come to the exhibits by ladies, and are delighted to note that they are fully up to those of the male exhibitors, while in many cases they show a finer artistic feeling.

Mrs. R. W. de Forest, of New York, received a diploma for seven views, all of which are artistic studies and pictures in which some one idea is brought out rather than to obtain a bewildering mass of subjects in one view. "A Quiet Bath," "Crabbing," "Picking Apple Blossoms," and "Adirondack Solitudes," were to us the best of an exceeding choice collection, in which great skill was exhibited in the use of camera and lens and in development.

Miss Evelyn Welsh, of New York, had five pictures that showed good photographic work and careful study in light and shade. These pictures received a diploma, and the "Portrait" study was uncommonly fine. It showed great skill in posing and an admirable management of the light. It was one of the best portraits shown at the exhibition.

Miss Elizabeth A. Slade, of New York, also received a diploma for "Views among the Thousand Islands," "Birthplace of Gilbert Stuart," and "Street in

Nantucket, Mass." The views were gems of fine scenery and the other pictures were interesting scenes in quaint old places. The photographic work was well done and certainly deserved the reward which it obtained for the exhibitor.

At the lantern exhibition, Mr. Robert S. Redfield, Secretary of the Philadelphia Society, got the diploma for lantern slides. These pictures were not only charming studies, but finely worked up for the lantern. In addition to being very artistic, they were well suited for projection, in the peculiar fitness of the shadows and the clearness in the high lights. "Feeding the Donkey," "Blowing Bubbles," and "A Photographer's Camp," were particularly good in every way.

For transparencies, Mr. F. A. Jackson, of New Haven, obtained the diploma for half a dozen as fine pictures on glass as we have ever seen. "A May Morning," "Old House in the Lane," "Shade and Sunshine," "Ancient Oak, Woodbridge, Conn.," were perfectly beautiful pieces of artistic photographic work, and should be seen to be appreciated. Mr. Jackson must certainly be congratulated on his skill in the particular line of work with which he has identified himself.

This closes the list of those who obtained diplomas.

We must now stop, and in another article shall say something about the other exhibits.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

Robert Hunt was born at Devonport in 1807. His work has been pretty equally divided between geology and photography—the former his business, the latter his recreation. As Professor of Mechanics and "Keeper of Mining Records," Hunt was connected with the Government School of Mines and Geological Museum in Jermyn street for more than forty years, finally retiring in 1883. The publication of the researches of Talbot and Daguerre in 1839, found Hunt engaged on similar work. We owe to him the use of ferrous sulphate as a developing agent, the introduction of mercury bichloride for whitening positives, and numerous minor photographic processes based upon the action of light upon various metallic salts. But perhaps the chief benefit conferred upon photographers by Robert Hunt, was the publication, in the early days of the science, of a series of valuable text-books, which are even now of the greatest value and interest, and which form a mine from which many a modern experimenter digs jewels, and then displays them as his own. Hunt is exceptional in that he—truly a "Father of Photography"—is yet living and among us.

1841. "A Popular Treatise on the Art of Photography; including Daguerreotype and all the New Methods of Producing Pictures by the Chemical Agency of Light." 8vo. 96 pp. 29 wood-cuts and one plate. R. Griffin & Co., Glasgow. 3s. 6d.

"The Practice of Photography," published by Griffin in 1857, is described as a second edition of this book.

1844. "Researches on Light; embracing all the known Photographic Processes and New Discoveries in the Art." 303 pp. Illustrated. Longman. 10s. 6d.

Second edition, 1854. 8vo. 396 pp. Folding plate or frontispiece. New edition, 1862. 8vo. H. Bohn. 10s. 6d. Truly a most valuable book, embracing much original work, and indispensable to every worker in photography.

1849. "The Poetry of Science; or, Studies of the Physical Phenomena of Nature." (Actinism, Chemical Radiation, etc., pp. 166–192.) Post 8vo. 12s.

Third edition, 1854. 8vo. 421 pp. H. G. Bohn. 5s.

1851. "Hand-book to the Official Catalogues of the Exhibition of 1851." (Photography, Vol. I, pp. 397–411). Two vols. 12mo. Spicer Brothers and W. Clowes. 6s. Hunt states that seven hundred photographs were exhibited from six nations.

1851. "A Manual of Photography: a Treatise on the Chemical Changes produced by Solar Radiation, and the Production of Pictures from Nature by the Daguerreotype, Callotype and other Photographic Processes." 8vo. 234 pp. 52 wood-cuts, 2 plates. J. J. Griffin & Co., London and Glasgow. This book appeared as a volume of the second edition of the Encyclopædia Metropolitana. In the preface the author states that it must be considered as practically a new book, and not a reprint of the work he issued in 1841.

A third edition appeared in 1853. 8vo. 321 pp. 88 wood-cuts and colored frontispiece (Italian girl). J. J. Griffin & Co. 6s.

Fourth edition, 1854. 8vo. 329 pp. 87 wood-cuts and colored frontispiece (Flowers). R. Griffin & Co. 6s.

"New" edition, 1857. R. Griffin & Co. 6s.

This book had a very large circulation. It was the principal text-book of its day, and is still indispensable to all who wish to know something of the processes practiced by the founders of photography.

John Imison.

1803. "Elements of Science and Art, being a Familiar Introduction to Natural Philosophy and Chemistry, together with their application to a variety of elegant and useful arts. A new edition, considerably enlarged, and adapted to the improved state of science." 2 vols. 8vo. London. Printed for J. Harding, J. Murray, etc.

Vol. I. 639 pp. 24 plates. Camera Obscura, pp. 433–437. Magic Lanthorn, pp. 439–441.

Vol. II. 637 pp. 7 plates. On page 606 we find "A Curious Method of Forming Pictures by Nitrate of Silver." "It is well known that light has a powerful effect upon certain metallic oxydes, causing them to turn black. Mr. J. Wedgwood has availed himself of this property for copying paintings on glass, and making profiles of figures by means of nitrate of silver. Cover white paper or leather with a solution of nitrate of silver, and place it behind a painting on glass which is exposed to the rays of the sun. The rays which come through will blacken the paper, but the shades will be more or less deep in proportion to the quantities of light transmitted through the different parts of the glass. Where the glass is transparent and all the light comes through, the paper will be made quite black; where the paper is opaque, and does not transmit any light, the paper will be quite white, and there will be degrees of intensity of the shadow of every variety between these. This picture is not sensibly affected by the light of candles or lamps, but the daylight destroys it very soon, causing all the paper to become black; nor have any means hitherto tried for preventing this been successful. Besides the application of this property of nitrate of silver to copying the light and shadow of paintings on glass, it may be applied to some others. By means of it delineations may be made of all such objects as are partly opaque and partly transparent. The fibers of leaves and the wings of insects may be pretty accurately represented by it, by only making the solar rays pass through them upon prepared leather or paper. Professor Davy has found that the image of small objects produced by means of the solar microscope may be copied without difficulty on prepared paper. He found that the best proportion was one part of nitrate to about ten of water. This is sufficient to enable the paper to become tinged without hurting its texture."

Nothing could be clearer than this description of positive printing, and it must be a matter for surprise that when so much was known in 1803, nearly forty years should have elapsed before photography became a matter of fact. It has been urged that Wedgwood and Davy's papers having been published only in the *Journal of the Royal Institution*, remained all but unknown, and therefore without effect. But this work of Imison's had, for its time, a large circulation.

(*To be continued.*)

ANNUAL REPORT OF THE PRESIDENT OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

It affords me much pleasure to lay before you this evening a report of the work that has been accomplished at the termination of the third year of the society's existence; not only because, as a society, we have succeeded in overcoming many difficulties which usually beset young organizations, but also because we are to-day strong, well equipped, and prepared to advance toward a higher plane of usefulness.

WORK OF THE YEAR.

In giving an outline of the work of the year, I should not fail, in the beginning, to speak of the death of our valued friend and Director, Mr. Gilbert A. Robertson, who, as many of the older members may remember, took an active part in promoting the interests of the society. His demise took place the latter part of the night of our last annual meeting. Fortunately, so far as I am aware, we have lost no members by the same cause during the past year, and I trust we may all live long to enjoy the benefits and privileges which the society may grant.

Beginning with the annual meeting of April 13, 1886, I note the following results. After the reading of the annual reports of the several officers and committees, a report of the Joint Exhibition Committee advising the co-operation of this society, in joint exhibitions to be held annually, with the societies in Philadelphia and Boston, was submitted. On the walls hung the second Presentation Print exhibition, which had been successfully completed through the efforts of Messrs. Walker and Baker. Mr. Carbutt exhibited a highly colored almanac, with negatives made from the same on ordinary and orthochromatic plates. Mr. Newton spoke of locally intensifying negatives by covering the portions not to be treated with oil or vaseline. Mr. W. I. Chadwick, of the Manchester (Eng.) Society, who was present, on being introduced by me, gave an amusing and interesting chat on English societies. In referring to our American apparatus, he said it was quite different from theirs. He regarded the dry collodion process as the best for lantern slides.

April 27th.—Death of Gilbert A. Robertson, a Director of the Society, was announced, followed with some touching remarks on his services and character by Dr. Janeway. Report of the Judges, Messrs. F. Roudel and Theodore

Gubelman, awarding the Presentation Print, entitled "Surf" to James F. Cowee, Troy, N. Y. The Lantern Slide Committee reported the standard size for lantern slide plates should be 3¼ x 4 inches. Adopted. Then followed a lantern exhibition of one hundred slides contributed by the Cincinnati Camera Club. Meeting closed with discussion on the cause of the "Fading of Albumen Prints." It was the last meeting held in the old quarters, 1260 Broadway.

On May 1st, under a lease for two years, the society took possession of the present quarters, then but a mere shell or barn of a building used for the storage of furniture and the like. So much had to be done to put it in presentable shape, that the officers were obliged to postpone the first regular meeting from the second Tuesday in May to Friday, May 21st, and I am proud to say that our first meeting held here was most enthusiastic and promising, the hall in fact being really too small to accommodate all the members and friends who desired to attend. The reason was doubtless due to the fact that we had for our chief entertainment the excellent and instructive "Charcoal and Chalk Talk" of our honored member Mr. J. Wells Champney. Resolutions expressive of the esteem of the society for Mr. Gilbert H. Robertson's services were passed, also an amendment to the constitution reducing the number necessary for a quorum of Directors from six to five. Mr. Walter Clark's new camera for instantaneous work was exhibited. The award of a prize of fifty dollars by W. D. Holmes to Cyrus Prosch for the best shutter, called "The Duplex," was announced.

June 8th.—Proposed Rules for Joint Exhibition submitted by New York Committee. Exhibition of Professor Laudy's apparatus for supplying oxygen as needed for the lantern very successfully worked. Table of the intensity of lime lights. Mr. Newton's soda and potash developer discussed. Glazing of albumen and bromide prints. Exhibition of the Satchel Camera.

June 22d.—Report of the Philadelphia Society's Joint Exhibition Rules read. Donations of books by Dr. John H. Janeway, H. M. Grisdale, and Mrs. Rebecca I. Robertson. Lantern exhibition of the Philadelphia Amateur Club's slides and those made by our own members; also sixty slides donated by F. J. York, of London.

During the hot weather of July no regular meetings were held, but the improvements in the dark room and other facilities afforded were almost daily used by some member of the society.

July 22d.—Field excursion up the Croton River, N. Y.

August 25th.—A summer "experience" meeting was held. Formula of Warner's potash developer given. Prize silver cup proposed by Mr. T. H. Blair. Exhibition of the twenty-five cent Pin-hole Camera, also Nash's Boy's Camera. Mr. Fisk related his experiences with the Customs authorities in Canada. Mr. Simpson also spoke of the difficulties to be met with at Manhattan Beach.

September 14th.—The employment of a photographer to do printing for members was announced. Letters from Joseph R. Greatorex, relative to candle-power of the lime light, and a circular letter from T. H. Blair on the prize silver cup were read. Exhibition of Warner's Light-tight Plate Holder, also of Mr. Glover's Detachable-leaf Album. Exhibition by Mr. Frederick E. Ives, of Philadelphia, of his Ether-oxygen Lime Light Lantern and Apparatus. Specimen pictures taken from a painting of the "Midnight Sun" on different orthochromatic plates were shown. Discussion on "Screens for Lantern Projections." David Cooper gave an account of photographing colored buildings. Adee's pyro formula for lantern slides and Jackson's formula for potash developer were given. Mr. Rockwood related some reminiscences of his summer trip to Europe.

September 29th.—First fall lantern exhibition; Pittsburg and New York Societies' slides. Letter from Thomas Plener, of Vienna, Austria, relative to the cause of the silvering appearance in gelatine films.

October 12th.—Exhibition of Barker's Improved Camera and Lewis' Tripod. Mr. Grisdale showed his special attachment for 5 x 8 cameras adapting it to be used for 4 x 5 plates. A new Combined Camera and Changing Box by Mr. Loeber was shown. Mr. Apgar exhibited an Improved Duplex Shutter. Paper entitled "An Amateur's Experience Photographing in the Rocky Mountains," was read by Randall Spaulding. Mr. Beach showed an Improved Chimney for Magic and Enlarging Lanterns. Dr. Janeway discussed "Don'ts and What Will We Do With Them." Discussion on development of plates.

October 20th.—Field excursion to Passaic, N. J. Party entertained by Secretary Granger at his residence.

October 22d.—Meeting of the First Joint Exhibition Council at the Society's quarters, representing the Photographic Society of Philadelphia, the Boston Camera Club, and this Society. Formal rules and regulations were adopted to govern the united exhibitions, as they were to be annually given in the respective cities. Present at the meeting were C. W. Canfield, F. C. Beach, John T. Granger, Robert S. Redfield, John G. Bullock, and George E. Cabot.

October 27th.—Rules established by the Joint Exhibition Council were accepted and adopted. Dr. W. G. Thompson gave an interesting lecture on "Photographing the Heart in Action," exhibiting his special apparatus for the purpose. Mr. William H. Rau, of Philadelphia, read a paper on "The American Film Paper," giving directions for working it. He also gave a practical demonstration showing how readily the film was removed from the paper.

October 28th.—The Bartholdi excursion down the harbor. Noted for the number of poor pictures secured and for the substantial financial results.

November 9th.—Appointment of Special Committee on a Society Portrait Album. Paper read by F. C. Beach on "Pyrogallol," communicated to the society by Professor Spencer B. Newbury. Instructive remarks on "Composition in Photographic Pictures," by J. Wells Champney, with practical illustrations by matting out lantern slides and projecting them on the screen. Exhibition at the same time of Tisdell's Improved Lantern and Apparatus, wherein the oxygen gas for the lime light is manufactured as used. Discussion on the Question Box questions.

November 18th.—Entertainment and stereopticon exhibition at Association Hall. Address on "Amateur Photography" by F. C. Beach. Humorous recitations by James S. Burdett, followed by a lantern exhibition of English views.

December 14th.—Reports of Society Album and Lantern Slide Committees read. Interesting remarks on "Anatomical Photo-micrography," by Dr. J. West Roosevelt, followed by an exhibition of his apparatus. Paper on "Unboiled Emulsions," read by Professor Spencer B. Newbury. Remarks on "Spots and Pin-holes in Plates," by Dr. Janeway. Discussion on "Faults in Plates," also discussion on "Best Light for the Dark Room."

December 29th.—Lantern exhibition of one hundred London Camera Club slides.

January 11, 1887.—Improved Hoover Shutter exhibited. Paper on "The Vergara Dark Slide and Improved Woodbury Tissue" by F. C. Beach, followed by a demonstration on the developement of the tissue. Communication by W. E. Partridge on "Development in the Field and a Record Book," read by George H. Cook, Secretary *pro tem.* Paper on "Development of Lantern Slides with Pyro," read by F. C. Beach. Appointment of a Special Committee on Dark Room Lights. Demonstration on the development of ferrotype dry plates by D. C. Hoover.

February 8th.—Exhibitionof Tisdell's Improved Detective Camera. Paper on "Enlarging on Bromide Paper," read by F. C. Beach, followed by demonstration. Discussion on the development of plates, also on the standard weight of an ounce. Paper read by Dr. John H. Janeway, on "Formulas for Developers: How Should they Read."

February 23d.—Lantern exhibition of one hundred slides contributed by the Cincinnati Club, also a few by our own members. Campbell Improved Fly-open Exposing Shutter was shown.

March 8th.—Dr. Janeway replied to several questions in the Question Box. Interesting experiments on "The Reflection, Refraction and Polarization of Light," by George M. Hopkins.

March 23d.—Lantern exhibition of the Boston Camera Club's slides. Fairchild's improved lime light lantern employed, in which both gases are generated as fast as used.

March 26th.—Opening of the First Joint Annual Photographic Exhibition at Ortgies' Gallery, 845 Broadway, lasting one week; four lantern exhibitions given.

From the reports of the Librarian and Chairman of the Lantern Slide Committee, it will be noticed that the donations of books, photographs and slides to the society during the past year have been quite extensive.

The following is a record of donations received during the year.

APPARATUS.

June 24, 1886.—Presented by Mrs. Rebecca Robertson, the property of Gilbert A. Robertson deceased: Two ruby lanterns, ten printing frames, sixteen trays, one drop shutter, glass test tubes, two negative racks, five negative boxes, and one 4 x 5 copying camera.

August 25th.—Loaned to the Society by Mr. Osgood Welsh: One 11 x 14 Scovill copying camera. Loaned also for use in same by F. C. Beach, an 8 x 10 Rapid Symmetrical Ross Lens.

October 27th.—Presented by Dr. H. G. Piffard: One Anthony enlarging easel.

December 21st.—Presented by E. & H. T. Anthony & Co.: One 19 x 24 porcelain silvering tray as a Christmas present.

December 27th.—Presented also as a Christmas present by the Scovill Manufacturing Company: One 8 x 10 mahogany portrait camera, with two plate holders. Also on

February 3, 1887.—One 16-inch cone for same, and three extra kits for the large copying camera.

March 9, 1887.—Presented by E. & H. T. Anthony & Co.: One 8 x 10 retouching frame.

MISCELLANEOUS.

Presented by Mr. Richard H. Lawrence: One black walnut table desk.

By Mr. Joseph S. Rich: One black walnut Secretary's desk.

CASH.

Henry V. Parsell	$125 00
C. Volney King	25 00
L. H. Laudy	10 00
Frank H. Carter	2 00
	$162 00

It will be seen from the foregoing that the donations of apparatus have been of a more substantial character than those of the previous year. It is very desirable that they should increase with each year's growth of the society. We should own and provide for the use of members the best and most approved kinds of apparatus. It had been my hope that manufacturers observing the good the society is doing for them and the community at large, would contribute specimens of their apparatus for the society's use. The merits of such apparatus could then be impartially tested, which would doubtless prove to be of considerable benefit to the contributor.

During the early part of this year it was decided to adopt the policy of renting, for a small fee, to members or their friends, cameras, lenses, etc. And it has been suggested that as soon as the many permanent improvements have been completed, a portion of the surplus revenue of the society be used for the purchase of different kinds of lenses and apparatus. It frequently happens that one member has to borrow another's instrument to do a certain class of work. But by having on hand, ready for immediate use, a number of cameras, lenses, and tripods of different sizes, a member will not only have a chance to try, before purchasing, the kind of apparatus he takes a fancy to, but can go off on a two or three weeks' vacation with an expensive instrument which perhaps he could not afford to purchase. Of course certain regulations will need to be established to secure the society against loss. Another convenience for members which has been arranged, is the sending to the society, on consignment by the plate manufacturers, of small lots of their latest and best plates, and I am happy to say the idea is meeting with favor. Small quantities of chemicals are also kept on hand. There is no reason why a society of our standing should not provide for the convenience of its members a few needed supplies, any more than for a boat club to provide boats and persons to care for them, or for an athletic club to provide clothing, tools and equipments.

Since last September a photographer has been engaged to do printing for members, and as the experiment has proved to be a success his employment may be regarded as permanent. At a recent meeting of the Board it was decided to pay the photographer a stated salary, the society to supply all the material.

It was with some hesitation that the officers negotiated for the lease of the present quarters last year, because of the doubling of the rent, and the large expense involved to make the necessary improvements. The risk was something which many members would not care to shoulder, hence I feel that we should be especially thankful to the Directors elected at that time for their willingness to take a personal responsibility in the possible debts that might have been incurred. My prediction then was that in case we took this place and fitted it up with all the modern conveniences for photographic work, we would largely increase our membership and be able to materially add to our income. That this prediction has been more than fulfilled, is clearly shown by the marked increase of membership as reported by the Secretary, by the report of the Treasurer, and also by the fact that at first we supposed sixteen single lockers would supply all the wants of members who would care to work here, until now we have over seventy. It is fair to presume that as the membership increases, over one hundred lockers will be needed, hence it is plain that our present quarters are becoming too limited, and we should take steps either to enlarge what we have or secure more commodious quarters elsewhere.

Concerning the proposed sky-light talked of last year, it may perhaps be well for me to say a word in explanation. Plans were made for a sky-light, but it was found the outlay necessary to build it and restore the building back again, in case the society moved out, was going to be so heavy that it would not pay, considering the short lease we had. The matter will doubtless be pushed as soon as a longer lease can be obtained, or other and better quarters are secured.

In looking over the work of the year, I find that we have not fell behind the previous one. Very few papers have been read by members in comparison to the large number of the latter, and I trust the coming year will spur others to do something for the society. When you discover anything that is useful, helpful, and important, don't keep it to yourself, but communicate it to the society at large.

We have had a larger number of lantern exhibitions than in any previous year, and I am gratified to observe that a greater degree of interest is being shown in this interesting branch of work; also to notice that the work of several members of our society compares very favorably with that of others. We need to aim for a higher standard, embodying with the perfection of mechanical detail the qualities of artistic composition.

Mr. Champney's remarks in May, and his admirable plan of matting out the non-essential parts of a picture in a lantern slide as shown to us last November, I firmly believe are bearing good fruit. This advice is not to rely on one uniform mat for all sorts of pictures, but to suit the mat to the picture. We thus add more variety to the pictures as they appear on the screen and show something worth looking at every time.

As will be noticed from a report of the Lantern Slide Committee, the interchange of lantern slides in this country among societies here, and the international exchange with the London Camera Club, has been successfully carried on, and has resulted in adding a large number of interesting foreign slides to our permanent collection. It is probable now that the plan is so well organized, better pictures will be produced, which will tend to make our lantern exhibitions more entertaining and instructive.

The most striking event in the society's year just closed is the very successful photographic exhibition recently held at Ortgies' Gallery. So well done was a majority of the work displayed, both in its technical and artistic qualities, that the Board of Judges, as shown by their report, were puzzled to whom to make awards. It proved to be a task far greater than they expected, plainly proving that the amateur, when applying thought and study, can turn out work of superior excellence. That the exhibition has and will result very beneficially for the society no one can deny, while the fact that we have the honor of holding it first on a grander scale than any previous exhibition, will always stand out as a pleasant remembrance in the history of the society. It is also gratifying to know that some of the best examples of work were presented to the society at the close of the exhibition. My only regret concerning it is that so few of our members, in comparison to our size, contributed pictures. We should have made a larger display. My hope is that its success will stimulate a better showing for next year. It is only by carefully conducted exhibitions that we can note the progress of the art. In this they are as useful as the exhibitions of modern paintings.

During the past year no specially new or prominent discovery has been made, but much thought and experimenting has been given to the preparation of plates sensitive to colors, and it is believed considerable advance has been made in this direction in this country. It is a very interesting subject for investigation.

I believe it is generally considered that the manufacturers of dry plates are taking more pains than formerly, for we hear of fewer complaints. There is still room for improvement.

I recently learn from an American traveling abroad, who is well posted on emulsions and the chemistry of photography, that the trouble with American plates was in the small proportion of silver they contained. As a rule he found they varied considerably, and with them he was unable to obtain uniform results; whereas with a certain brand of English plates, well known for their uniformity in having an invariable standard of silver, he never missed in obtaining an excellent crisp, clear negative. It has been my experience to note this variableness in plates here, and I believe I am not alone in that experience. Our American plates are certainly put up in better shape than formerly.

It is interesting to note, on the subject of developers, a majority of the manufacturers of plates here are about equally divided between pyro and soda, pyro and potash, pyro and soda and potash. Amateurs largely prefer pyro and potash, which works with the best effect on under-exposed plates, especially when the latter are of the insoluble, non-frilling kind.

The catalogue of the recent photographic exhibition shows that out of one hundred exhibitors, 37 preferred soda, 3 potash and soda, 38 potash, and 18 ammonia as an alkali. Seven preferred oxalate and iron. If this is any criterion of the practice of the photographers throughout the country, it may be set down that potash and soda are the most popular and reliable alkalies.

So far as I am able to learn, the use of paper as a substitute for glass has not been so extensive as it was first thought it might be. Those who use it invariably turn to the American film paper, where the transparent gelatine film can be removed after the picture is developed. Three or four of the members of this society have successfully worked it. The emulsion, however, is said to be not quick enough for extreme instantaneous work. Next in convenience to this appeared the Woodbury film, a step in the right direction, but yet not fully complete. The gelatine is not sure to cling to its transparent paper support, particularly when development occurs in a strong alkali solution. I believe if these minor defects were overcome it would furnish the film needed for the amateur.

One very encouraging feature of the year is the admittance of ladies to the membership of the society. When they can do such fine work as was shown at our recent exhibition, I feel that we have done the wise thing in accepting their proffered encouragement by admitting them, and I trust this year will be a prosperous one for these members.

The present cordial relations existing between this and other home and foreign societies should be continued and fostered. Already the Camera Club of London is becoming of substantial benefit to our members traveling abroad. We in turn will welcome them here, affording every facility within our power.

It is surprising to note the number of new clubs springing up all over the country. The fact seems to show that the practice of amateur photography is becoming extremely popular as an amusement, requiring, by means of such associations, an organ to advance it towards a higher state of perfection.

That this society has prospered since its organization no one can gainsay, and in becoming the exponent of all that is new, useful, instructive, attractive and good in the art of photography, it fulfills a mission which will be enduring.

Our prominent standing to-day before the photographic and the outside world is the result of hard, earnest, systematic work. Let us strive to maintain and preserve it, and press on to a still higher standard.

I would not fulfill my duty if I did not extend to my fellow Directors my sincere thanks for their faithfulness in conducting the affairs of the society.

As for myself, I have only to say that I have striven, in season and out of season, day and night, to push the standing of the society along, hoping to make it a permanent success. How far I have succeeded I leave you to judge. I am conscious that I may have committed many mistakes, which I sincerely ask you to overlook.

Thanking you all for your continued support of the society, and for your kind indulgence in the past, I close with the hope that our present prosperous institution may go on and prove still more beneficial to us and to its future friends.

F. C. Beach.

THE EXHIBITION OF THE PHOTOGRAPHIC SOCIETIES.

BY W. E. PARTRIDGE.

Every amateur calls to mind with disgust instances where he has shown platinum bromide or blue prints and had some friend say in a half patronizing tone "don't you take photographs?" with a little sneer, intended to be exasperating, placed on the last word. No amount of explanation can console such people for the absence of the purple and brown color and the gloss of the professional photograph.

From the standpoint of the great public the exhibition can hardly be called one of photographs. Glossy albumenized silver prints occupy less space on the walls than the blacks and whites and blues. This is a very interesting fact and marks a step of progress. The beauty of bromide of silver printing for landscape was shown in a most striking manner in this exhibition. Landscape in bromide or platinum completely outranked others of much greater excellence which had been printed on albumen paper and toned as usual. The delicate grays and pure whites are far better exponents of nature than the red tones of the common process, while the deep shadows and blacks of the platinum and bromides are infinitely in their favor.

The relative artistic merits of the platinum prints as compared with the bromide of silver has not been settled by the exhibition. Practically one could not say which was which. One exhibitor, Mr. Cowee, of Troy, N. Y., showed a platinum landscape mounted on a sheet of bromide paper on which a border had been printed. Before they were hung, several gentlemen examined these pictures closely at the rooms of the society. No one who saw them discovered the slightest difference in the different parts of the work, and it was only when the blank for the catalogue was examined that the difference in the paper was discovered. Even then it had to be taken on faith.

The platinum process deserves to be better known and more widely practiced. The results obtained, both in England and this country, show that it is a process which may be made peculiarly useful to the amateur. It will give good results with negatives which are entirely useless with most other processes. For work that is wanted at once it is unrivaled. In this respect it is quite equal to the blue print, as its quicker printing qualities make up for the time lost in sensitizing. One is as quickly washed as the other. The full power of the process was unfortunately not brought out at the exhibition. This is to be regretted. Mr. Walker, of the New York Society, was unable to show specimens of his work, which would have been especially useful in demonstrating the artistic value of the process.

The bromides were out in full favor. They were everywhere, and in every place were good. Whether for direct printing or for enlargements the process leaves almost nothing to be desired. Every shade from a velvet black up is obtainable. Vigor or softness, or both, were successfully obtained, and the results were so frequent and so uniform as to show that the process is not overrated by its friends.

Some of the skies printed on bromide paper were certainly the finest things of the kind that have yet been shown. They seemed more like delicate washes of Indian ink than anything producible by photography. For enlargements there is of course nothing which can approach this process. With a perfect negative, or with one as good as almost any one can make when he gets a good plate and avoids bubbles, the degree of enlargement may almost be said to be unlimited. Ten or twelve times is certainly possible. The results of such enlargements are pictures which are peculiarly well adapted for framing and hanging on the wall. In fact if a man wishes a series of views to hang upon the walls of his parlor, and intended to take them himself, he would not need to decide the question of whether he should use a 4 x 5 camera or a 24 x 36. Even if there was no question of cumbersome apparatus, the small pictures enlarged to the required size would produce the best effect.

These observations were abundantly justified by the work shown at the exhibition. Very fortunately in numerous cases both the enlargement and a print from the original negative could be seen. The facilities for making a good small picture are always much greater than for a large one direct. The ratio of focal length to size of the picture may often be made many times greater than is possible with a large lens, and in this way the small picture covering a quarter plate may when enlarged give results unattainable in any other way. The tourist has greater latitude in composition with a small plate than with a large one and can with a comparatively small battery of lenses choose his own distance, an impossibility with a large camera.

The study of the catalogue showed some interesting facts in regard to lenses. Of course the Dallmeyer stood at the head in numbers. A hasty count of noses showed 103 Dallmeyer, 55 Ross, 51 Darlot, 41 Euryscopes, 27 Beck, 15 Morrison, and 6 or 8 single landscapes. Many of the latter were doubtless to be found under the other heads. The prejudice against single lenses is something which it is hard to account for, yet it certainly exists. The work of a good lens of this kind is often as nearly rectilinear as that of some of the cheap rectilinears. In this enumeration of lenses count was made by frames, and somewhat hastily, and though not complete it shows that the best lenses are appreciated in this country.

The albumen silver prints showed every variety of tone possible to obtain with the ordinary toning baths. Those by American exhibitors showed a decided effort to get as near to black and white in effect as the process will admit. Ample deposits of gold, shown by the dark tones, will make these pictures reasonably permanent. The terra cotta colored mats selected for several of these exhibits improved the tone very much, by making the pictures seem black and white.

The English pictures on albumen paper were toned in a way that can hardly be accounted for. A foxy-yellow prevailed in all of them. This was redeemed by placing a large proportion of them on yellowish mats like mill-board. How this tint is tolerated it is difficult to understand. It can hardly be placed to color-blindness, as the same thing is to be seen in a large proportion of the continental photographs of celebrated places.

The blue prints deserve greater attention than has been given them by amateurs. For purity and brilliancy of high lights the best of those shown were more than equal to the pictures by any other process. Their scale of color is practically greater than that of an albumen silver print, as they give much higher whites. With a thin negative a better picture can be obtained by the blue process than is possible in any other way, except perhaps the bromide of silver. For flower work the blue prints are most charming, and it is to be hoped that the process will be more generally employed by amateurs.

1787. In Memoriam. 1887.

JOSEF FRAUNHOFER.

On the 6th of March it was just a century ago that at the house of a poor mechanic in Straubing a child was born whose feebleness promised no long life, but who was destined by fate to enroll his name in inextinguishable letters upon the glorious list of the most prominent investigators and philosophers of all time.

That boy's name was Josef Fraunhofer. In extreme poverty and privation, without any guidance or education, he grew up.

After the early death of his parents, when not quite twelve years old, he was sent to Munich and was apprenticed to the glass-grinder Weichselberger, to learn that trade. His master, a hard man himself, without any knowledge or education, would not even permit the boy to go to Sunday School to perfect himself in reading and writing.

Fraunhofer had been almost two years with him, when one day the dilapidated dwelling of his master suddenly gave away, burying the unfortunate inmates under its ruins. The master's wife was found dead, but Divine Providence had saved the poor apprentice's life and left him unhurt. All Munich spoke about this miraculous escape. The report also reaching the ears of the then reigning prince, Max Josef of Bavaria, he sent for the boy, and the latter, upon presentation, made such a good impression, that the prince ordered his chamberlain to keep an eye upon the boy and guard his movements.

Thus the momentary humor of a prince was the first cause that the remotest parts of the heavens are penetrated and explored at the present day with giant telescopes; that the photographic lens possesses its present perfection; and that many important scientific investigations are to-day the general property of mankind.

Utzschneider, the chamberlain, and himself one of the most genial men of Bavaria, in obedience to the wishes of his sovereign, visited young Fraunhofer repeatedly, and soon discovered the boy's still slumbering talents. His greatest ambition was to become an optician, and Utzschneider gave him to understand that his only way to success was a thorough knowledge of mathematics, and the study of theoretical optics and the refraction of light rays through prisms and lenses. Thus he gradually guided his way to education.

At last the six years of hard apprenticeship were at an end, but not so the time of his sufferings, the young journeyman not being able to find suitable employment. But soon the opportunity came which was to pave the way to a future glorious life.

Utzschneider, in partnership with one Reichenbach, had established a mechanical institute, manufacturing astronomical and geodetical instruments of such an exactness as had not previously been seen anywhere. Such instruments required telescopes, and the glasses for these could only be procured from England. This being blockaded at the time by Napoleon, the scientists on the Continent were at a loss what to do. Utzschneider soon after discovered a man in Switzerland acquainted with the manufacture of these glasses. He engaged him under contract, with the agreement that he was to communicate his methods to another person to be appointed and engaged by Utschneider. The party selected was young Fraunhofer.

The mechanic from Switzerland proved to be unable to fulfill his contract for want of proper knowledge, and it was Fraunhofer's problem, after the discharge of this man, to discover a proper method for the production of this glass. He went to work with energy and succeeded, and to get an idea about the magnitude of his invention, which he never divulged to anybody, it may be mentioned here, that even after his death the French government offered a prize of 100,000 francs to the discoverer of the best method of making faultless glass for lenses. Fraunhofer soon constructed telescope lenses of 6 and 7 inches in diameter surpassing all previously made, and it may be mentioned here that the giant telescopes of the present time are still made after the same method.

Fraunhofer is actually the father of our present system of optics, as without his instruments astronomy would not have reached its present high position. Two astronomical instruments particularly—the so-called heliometer for the observatory at Königsberg, and the large refractor for Dorpat—gave him a world-wide celebrity. The large telescope of Dorpat, which is still in use for the finest observations, has a lens of 9 inches in diameter and a focal length of 14 feet.

The great success attained by Fraunhofer could not fail to place him socially and financially in a good position. He became a partner in Utzschneider's institute, was made a member of the most prominent scientific societies, and his king even made him a noble, thus bestowing the highest honors upon him. Unfortunately his health left him, and six years after his construction of the Dorpat telescope he was hardly able to be personally active.

About this time the King of Bavaria ordered a telescope that was to surpass the one at Dorpat in size. The price set apart for the same was 30,000 florins, of which 20,000 florins were to be paid in advance. Fraunhofer was at that time already suffering very much, and expressed himself to a friend: "It is great imprudence to promise the execution of such an instrument."

He died on the 7th of June, 1826, and on the monument adorning his grave are the proud words: "*Approximavit sidera.* He has brought us nearer to the stars."

Should, as is generally believed, this giant instrument be the largest telescope with glass lenses that can be made, or should we succeed in the future in the construction of larger and still more powerful ones, one thing is certain, it was Fraunhofer who paved the way for his successors of to-day. With the instruments made by his hand we have pierced the barriers leading to the starry heavens and have measured the distances of fixed stars, while his apparatus is still considered the finest known by astronomers. H. D.

PHOSPHORESCENT APPEARANCES IN DEVELOPING GELATINE PLATES.

BY DR. J. M. EDER.*

If a bromide of silver gelatine plate after developing with pyrogallic acid and washing is put into an aqueous solution of alum, a phosphorescent appearance will oftentimes take place, a faint whitish light appearing for a moment on the surface of the film and the surrounding solution.

The Editors of the BULLETIN recently drew attention to this peculiar phenomenon, mentioning that Perrot de Chaumeux had already made known this observation to the French Photographic Society; and also Pector and Londe to the same society. Soda, as well as potash, had been used in the developer, and the effect was in both cases the same. They further state that the presence of the bromide of silver plate is a necessary condition for this phenomenon, as the simple mixing of soda-pyro developer with alum solution will cause no phosphorescence, which I can confirm.

I have repeatedly observed the phosphorescent appearances described here, and particularly when I put the developed bromide of silver gelatine plates directly from the pyro or potash developer into a saturated alum solution without washing. The phenomenon appears then very frequently in an absolutely dark room, but not always. A fogging of the plate in consequence of this appearance I have never observed.

Finally it may be mentioned that the appearance of phosphorescent light does not directly determine electrical proceedings, but that in other cases also phosphorescent appearances may be observable during chemical processes, *e.g.*, such as subliming benzoic acid and the crystallization of vitreous arsenic acid from the muriatic solution. During the formation of crystals from solutions of mixtures of sulphite of soda and sulphite of potassium, phosphorescent sparks can also be observed as soon as the room is sufficiently darkened.

The analogous proceedings during developing show that there are still many unexplained phenomena appearing in the different photographic processes, and it is difficult to decide whether they are accidental appearances or not.

[Dr. Eder has evidently misunderstood our article on this phosphorescent phenomenon. We distinctly stated that the effect was produced, *without* the dry plate, by mixing weak pyro developer with alum solution.—EDS.]

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* From author's advance sheets.

OUR ILLUSTRATION.

Our illustration represents perhaps the latest advance in art photography. It is a pure photogravure—that is, it is printed from a photographically engraved copper plate, the negative having been made by the orthochromatic or color-sensitive method. This combination has lately been used by the Photogravure Company in many important works for Messrs. Harper Brothers, J. B. Lippincott & Co., the Stewart Catalogue, the Public Printer, etc.

The original of our illustration is a charming portrait in oils, in the collection of Th. U. Vail, Esq., by whose kind permission we are enabled to present it to our readers. The color values of the original are very faithfully rendered, and the result is in striking contrast to the older methods of reproduction, whilst the photogravure work is fully equal to the highest European standard.

To those who are interested, we may state that Mr. Edwards will give a demonstration of the process of photogravure, as used by the Photogravure Company of New York, at the next meeting of the Photographic Section of the American Institute on the evening of May 3d.

A ONE HUNDRED DOLLAR PRIZE.

The Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co., $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

MEASURING SPEED OF SHUTTERS WITH PENDULUM.

To the Editors of the Bulletin.

Permit me to suggest that a rough and ready way of estimating the speed of shutters by pendulum vibrations, can be devised by any one having access to one of the common "metronomes" used by music teachers. These are arranged to vibrate in definite proportions of a minute, and the sweep is sufficient to enable one to estimate with considerable accuracy the speed of a tolerably rapid shutter, *e.g.*, if the top of the arm traverses the arc (of say $3\frac{1}{2}$ inches) in $\frac{1}{2}$ second, a movement of $\frac{1}{8}$ would indicate $\frac{1}{56}$ second. A background of card-board with an arc of same radius divided into eight inches would enable one to estimate the distance traversed without measuring. Yours, etc.,

C. E. Crehore.

Back Number of the Bulletin Wanted.—We will give full price for a copy of the Bulletin for January, 1881, in good condition.

ANTHONY'S

Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE CANADIAN INSTITUTE.

THE first annual exhibition of the Photographic Section of the Canadian Institute, opened at Toronto on April 12th, proved a great success. Over one thousand photographs were shown. Three of the walls were covered with pictures, while the fourth was devoted to a screen for the exhibition of the lantern views of the amateurs. The exhibit included some magnificent large views of Colorado scenery, kindly lent for the occasion by Mr. McGaw, of the Queen's Hotel. Mr. Baker, of Toronto University, had also a handsome collection of scenery in British Columbia, whilst a third gentleman had a well-stocked album of interesting scenes in Scotland. The collection included views from almost every quarter of the globe, and promised well for the next exhibition of this scientific branch of the institute next autumn.

Among the principal exhibitors were the chairman of the branch, Mr. Hugh Neilson, whose collection of Muskoka views is one of the best in Canada. Mr. Manchee also exhibited some views of Muskoka, together with a number of fine pictures of the Niagara River and its surroundings. Mr. Bethune showed a most exquisite bit of work—a waterfall with fishermen hard at work casting for the finny fry. The lighting and composition and display of chemical effects in this picture is as near perfection as one can expect in the present state of the photographic art. Mr. E. Parkhurst showed two or three heads. One—that of an old man—justly deserved the first prize which it got. Mr. W. W. Fox had an exhibit of between sixty and seventy pictures, including views of the recent Northwest rebellion, pictures from the West Indies and Gulf of Mexico, scenes from lonely Labrador, and others from among the ice and Eskimo of Hudson's Bay. One of his groups, a party of Indians, took a first prize. The judging was in the hands of Mr. Forbes, artist, of this city, and of Mr. Berraud, professional photographer, of Barrie. Both gentlemen expressed themselves as surprised and delighted with the work shown, both from an artistic and a chemical point of view, for much of the success of a photographer depends upon the manipulation of the chemicals used in its production.

Following is a list of the prize winners.

Best enlargement, amateur work throughout, Manchee; best finished picture, amateur work throughout, Bethune; best negative on Stanley plate, amateur work throughout, Manchee; best lantern slide, amateur work throughout, Timms; best group, amateur work throughout, W. W. Fox; best interior picture, amateur work throughout, Bethune; best bromide contact print, amateur work throughout, Manchee; best landscape, amateur work throughout, except printing, Hugh Neilson; best instantaneous print, amateur work throughout, except printing, Hugh Neilson; best general exhibit, Bethune; best portrait, E. R. Parkhurst; best landscape, amateur work throughout, Bethune.

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THE PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

A MEETING of this association was held at 605 Merchant street, San Francisco, on April 7th last; George W. Tashiera presiding, and A. S. Herrick, *Secretary*. Sidney M. Smith, was re-elected *Corresponding Secretary* for the ensuing year. The following committees were also elected: *Executive Committee:* Clinton Day, J. L. Cherry, W. S. Davis. *Membership Committee:* H. Jones, S. A. Brooks, Alexander Cheminant. *Committee on*

Rooms and Rules: E. L. Woods, S. C. Partridge, Dr. C. L. Goddard.

The association's rooms have been elegantly fitted up, and present the appearance of an art gallery. They are supplied with all the modern apparatus used in photography.

One of the fundamental rules of the association is that none of the members are permitted, under any circumstances, to sell any of the pictures or photographs taken by them. The membership has increased rapidly lately, and now numbers fifty.

Sidney M. Smith,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Regular Meeting, April 5, 1887.

President H. J. Newton in the chair.

The Secretary reported the receipt of the usual number of journals contributed monthly to the Section.

The Chairman of the Executive Committee announced that at the next regular meeting, Tuesday, May 3d, a paper would be read by Mr. Ernest Edwards, entitled "Art Illustrations by the Photogravure Process," and that Mr. O. G. Mason would contribute "Notes of a Voyage to the Moon," with lantern illustrations, followed by an exhibition of photographic novelties.

Professor L. H. Laudy was then introduced as the lecturer of the evening, and entertained the audience for one hour and a half in describing and illustrating with the stereopticon a trip to "Acadia and the Maritime Provinces." Many of the pictures were intensely interesting, and the descriptions of them vivid and precise.

Dr. Laudy opened his entertaining discourse by a few remarks upon the general exencies of travel and the many bits of advice that he and his party received before starting on his journey. His satirical remarks about gratuitous advice from people who had never made a journey outside New York State, were a source of much amusement. He said that his remarks would be confined to "a plain talk of travels through part of the land of Acadia," with such notice of the country and its industries as would be generally interesting.

The route followed was by way of Boston, *via* Eastport, Portland, and St. John. By means of a map, projected by the lantern, the line of travel was pointed out and a general description of the country followed. Nova Scotia, Dr. Laudy pointed out, was the land of Evangeline, made famous by the poem of Longfellow. But he found little either among its people or their surroundings to-day that would have led the poet to write such a poetical story. At Digby, made famous by the seizure of the American fishing schooner, while fishing within the three-mile limit, the party were introduced to the famous Digby chicks, which are a fine quality of herring. At this point a capital slide of the little fishing town was exhibited in the lantern, and also a view of "Digby Gut," the entrance to the harbor. The change from the fog and mist of the outside coast to the clear atmosphere of the bay was noticed by Dr. Laudy, who said that it was very remarkable and hard to conceive, considering the short distance.

An interesting picture of the fishing weirs was exhibited and an explanation given of their uses. These weirs consist of light brush and twigs placed in the soft mud at ebb tide. When the tide comes in the fish pass over the weirs, but there treating waters leave them stranded and readily caught.

An interesting description of the curing and smoking of the herring then followed, with pictures of the smoke-houses, showing the methods of carrying on this industry.

Wolfville, the little village made famous in Longfellow's Evangeline, was also visited by Dr. Laudy and his party, but all the incidents mentioned in the poem were unknown to most of the inhabitants, and much of the picturesque description used by the poet was not true, since he could never have visited the place and then have written so charmingly. It is nothing but a poor fishing village, which when visited "kills all sentiment and disappoints imagination."

At Windsor, the head of Minas Basin, the tide rises 45 feet, and Dr. Laudy showed a number of interesting slides, to give an idea of the effect of the receding of the water and the extent of the mud banks left behind when the tide runs out. In Windsor basin are a number of salmon hatcheries, and a number of pictures of these were shown, together with some specimens from the Cold Spring hatcheries near New York. These proved an interesting feature of the evening's entertainment, as the young fish were projected on the screen in a tank specially fitted for the purpose.

Dr. Laudy was particularly interesting in this part of his subject, and the pictures of the fish hatcheries both at Windsor and Cold Spring, N. Y., were a source of instruction to the audience. At Cold Spring, Mr.

Frederick Mather afforded Dr. Laudy every facility for obtaining views of the buildings, the interiors of the hatcheries, the troughs, and the various apparatus for propagating the different kinds of fish; and these pictures served to illustrate the same kind of industry carried on at Windsor in Nova Scotia.

At Pictou the party obtained some excellent views of the coal seams and also of the mines and mining operations. Pictures of the Ford pit, coke ovens, coal cars, coal heaps and the pay-day of the miners, were all interesting. Shediac, famous for its lobsters, gave Dr. Laudy an opportunity to study the lobster-canning industry and the attendant fisheries. Views of lobster pots, the method of unloading from the boats, and other scenes, were thrown upon the screen.

After a few stops at unimportant places, the party arrived at Gaspe, the famous cod-fishing station. It is a barren place, but what it lacks in vegetation it makes up in fish, and the inhabitants know and care for little beside the cod. Excellent views of street scenes, and the methods of curing and packing the cod-fish were shown at this point.

Leaving Gaspe, the party ultimately reached Restigouche River, a part of the boundary of New Brunswick, and here they had an opportunity of studying the salmon and trout fishing in the pools, leaps and reserves kept by the sportsmen in that region. A number of interesting and picturesque views were shown and much information of an instructive character was given during the exhibition of these pictures; especially in relation to the habits and life of the salmon from the ova to the full-grown fish.

The whole lecture was instructive and entertaining, and the pictures formed capital illustrations to the descriptions of places little known and seldom visited by Americans.

Mr. E. C. Townsend was then introduced and said:

Mr. President, Ladies and Gentlemen: I have to thank the section for permission to introduce a few pictures that I trust will add to the pleasure we have already enjoyed in witnessing Professor Laudy's exhibition.

Before presenting a picture of the tower now building in Paris, and which is expected to be completed in 1889, we will show two others, not that they are particularly notable for height, but from the study of them you may be able to draw your own conclusions as to originality of design in that of the great tower—the Arc de Triomphe and Notre Dame. [An excellent transparency of the tower, made from a colored lithograph obtained from Paris was then projected.]

That this tower will be a colossal structure is evident, from the fact that no less than eight thousand tons of steel is to be used in its construction, while its height will be 986 feet 2 inches. When completed, it will serve as a meteorological and astronomical observatory, and also for electrical and telegraphic purposes. The ascent will be by elevators, requiring from six to seven minutes to reach the summit. The design is by M. Eiffel (a noted engineer of Paris), who is charged by the government with its construction. This is the first structure of the kind ever attempted, and if a success must at least stamp the projector and builder as aggressive, bold and competent.

The number of lofty structures are on the increase, and as they are always interesting, we will devote a moment to a few of the more conspicuous ones, omitting remark, further than to give their respective, prospective and comparative altitudes.

According to Piazzi Smyth, the pyramid known as that of Cheops, in Egypt, was originally 479 feet, but since the removal of the apex or capstone it is only 450 feet. St. Stephen's Cathedral, Vienna, 452 feet; Strasburg Cathedral, 466 feet; Rouen Cathedral, 492 feet; Cologne Cathedral, 513 feet; New City Hall, Philadelphia (nearing completion), 537 feet.

Mr. Townsend closed his exhibit of the most lofty structures known to history by projecting on the screen the peer of all finished structures, our own Washington Monument, 555 feet high.

Dr. J. Habirshaw closed the lantern exhibit with a dozen or more slides made on Anthony's transparency plates that were gems in the way of photographic skill, as well as beauty and sublimity of scenery. These were briefly described by Mr. T. C. Roche, after which the section, on motion, adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED MEETING of the society was held Wednesday evening, April 6, 1887, with the *President*, Mr. FREDERIC GRAFF, in the chair.

The *Secretary* read a circular received from Mr. F. C. Beach, of New York, in regard to the American Lantern Slide Interchange. Mr. John G. Bullock explained the details of the plan and offered the following resolution, which was carried.

"*Resolved*, That the Photographic Society of Philadelphia join the American Lantern Slide Interchange, and that the committee lately in charge of the Society's Lantern Exhibition be authorized to collect and distribute the slides, and to carry out the intentions of the interchange as suggested by the circular."

The chair announced that the committee would consist of Messrs. Galloway C. Morris, William H. Rau, and William A. Dripps.

The Committee on Membership reported the election of Edward A. Selliez as an active member.

The Executive Committee reported that the new optical lantern, which they had been authorized to purchase, was ready for inspection by the members, and would be used to exhibit slides after the meeting.

The Excursion Committee reported, through Mr. Samuel Sartain, that an excursion was contemplated over the Morris and Essex Canal, starting at Easton, thence to Lake Hopatcong, where a two-days' stop would probably be made; thence to Newark, returning by rail. A week during the latter part of May was suggested for the trip, and members wishing to participate were requested to notify the committee by the next stated meeting (May 4th), or if possible by the Conversational Meeting, April 20th.

The *President* appointed Dr. Ellerslie Wallace, Jr., and Messrs. Bartlett and Samuel Sartain, a committee to conduct the competition for Presentation Pictures for 1887.

The *Secretary* suggested that those members who had exhibited pictures in New York, send them to the room prior to the May meeting, to be placed on exhibition there during the month of May to members and their friends, and to take part in this competition. It was also urged that the members make this exhibition as large and attractive as possible, so that the competition may be a more general one than has heretofore been the case.

A question in the box asked: "Is there any method of toning positives on glass?"

It was stated in reply that lantern slides were frequently toned in solutions of sulphuret of potassium, bichloride of palladium and bichloride of platinum.

Mr. WALMSLEY suggested slightly underprinting the slides, bleaching with bichloride of mercury, and then toning with sulphite of soda. As the latter acts as an intensifier, it is necessary to print light, or the slide will be too dense.

Mr. BARTLETT wished to call the attention of the members to an intensifier for gelatine plates which he had received from Mr. John G. Cassebaum. It possessed marked advantages over mercury, being gradual in its action, perfectly under control, and affording any degree of intensity required, without interfering with the printing qualities of the negative.

It is necessary to submit the negative to be strengthened to a preliminary bath to make it slightly acid. This bath consists of

Nitric acid	10 drops.
Chrome alum	1 ounce.
Water	20 ounces.

Citric or acetic acid may be substituted for the nitric, in the proportion of 1 ounce to 20 ounces of water.

Stock solutions are made as follows:

A.

Gallic acid	120 grains.
Alcohol	1 ounce.

B.

Silver nitrate	30 grains.
Water	1 ounce.

One dram of each of the above solutions is added to each ounce of water. The plate is put in an ordinary developing dish and the solution poured over and gently rocked to and fro. The negative will gradually come up and may be carried to any degree of intensity. Mr. Bartlett also mentioned the investigations of Dr. Lohse, on the modifications of the alkaline developers for bromide of silver plates, as published in the *Photographische Correspondenz.*

Dr. Lohse, in his trial of the various alkalies, in connection with pyrogallic acid, found that borax (biborate of soda), contrary to his expectations proved perfectly inert, producing not the slightest action upon the latent image. He further found that even the addition of soda or ammonia produced no action; while the borax remained present, the plate lay perfectly white in the dish. It was only after washing out the borax from the film that the action began and was completed.

The borax does not neutralize the action of the light, but prevents the reducing action of alkaline pyro developers. He accordingly suggests that this salt might be of advantage as a retarder in the developer.

Mr. Bartlett, acting upon the suggestion, added one drop of a saturated solution of borax to the ounce of developer, and found that the addition acted as a clearer of the negative without any appreciable retardation of the development.

Mr. John G. Bullock showed a chart which had been brought to the meeting by a visitor, which was a valuable aid to those who were called upon to photograph buildings or other subjects required to be taken from some special point, to obtain the best effect with a certain sized plate or with any special lens.

A base line was ruled across the bottom of the chart, and a perpendicular line down the center. From the point of intersection the angles radiated, and were ruled off on either side of the perpendicular line, every five degrees being shown, red and black alternately, making it easier to trace them up. Perpendicular lines were ruled on either side of the center, at distances corresponding to length of all plates used. The central vertical line was graduated in inches and centimeters. Horizontal lines were laid off, of a length corresponding to the longest plate each lens would cover, and at a distance from the base line corresponding to the equivalent focus of the lens. The angle line, intersecting lens line, and plate line would give the angle included and the particular size of plate, and any number of lens foci could be laid down, and the angle of any lens or size of plate could be seen at a glance.

The chart shown was 22 x 26, but angles of lenses of longer focus could be read by taking half the focus and half the length of plate.

Mr. Bullock also mentioned a peculiar circumstance in connection with a copying lens recently imported by Mr. Partridge, a member of the society. It was found that from some cause, at first unaccountable, every plate exposed with the lens was slightly fogged. New baths and developers of all kinds were tried, and camera and dark room were carefully examined for cracks where light might leak in. A critical examination of the lens revealed the fact, that owing to the angle at which the inner end of the lens mount was beveled, its extreme inner edge was struck by some of the rays of light after passing through the lens, and they were reflected in the shape of diffused light upon the plate, thus causing the fog. The difficulty was entirely overcome by use of a card-board diaphragm so placed as to cut off these rays before they reached the reflecting edge of the mount.

Mr. Fassitt showed some fine transparencies made on Carbutt's Ground Glass A Plates enlarged in camera from quarter size plates.

Adjourned.

Robert S. Redfield,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting, February 8, 1887.

(*Continued.*)

A *Member*—Mr. Ripley has made a statement about weights, and so has Dr. Piffard, and they are both correct. It has been my experience that apothecaries or druggists—when you buy anything over their marble counters—will invariably weigh it out to you by avoirdupois weight, 437½ grains to the ounce, and you take the prescription to the same apothecary and he will dispense it at 480 grains to the ounce, and it is that that I refer to.

Dr. Janeway—You all see by the discussions that have taken place here, that the only true way is to write your formulas in grains to the ounce. I am in favor of 437½ grains if you use the term "ounce;" but if you want 480 grains, say so in your formula. Is there any other gentleman who wishes to say anything on the subject?

Mr. Roosevelt—I made Mr. Ripley's formula—or rather I made the preparation from his formula—in a very short time and I was very glad that I had eventually found something that I could understand.

Dr. Piffard—If you will take any five formulas you can find and try to work those out throughout grains to the ounce, you will find that you cannot do it.

Mr. Roosevelt—No, sir; there are only a few you can understand. You can understand Mr. Ripley's and I can too.

Dr. Janeway—You will also find that in some of these formulas that they give you so many ounces of this, and so many ounces of that, and so many ounces of the other to 30, 40, 50 or 60 ounces of water, and they tell you that each ounce contains so much; but when you come to figure it out, you will find that it contains so much, more or less. And you scoop up one or two ounces here, and one or two ounces there, in making your preparation, and you think that you have got just so much carbonate of soda or sulphite of soda in the water, but you will find that you have not that much. You have something much more or less.

Mr. Roosevelt—Suppose, Mr. Ripley, we just double the amount of pyro in the solution, would that tend to give us more contrast.

Mr. Ripley—Yes, sir.

Mr. Roosevelt—Or would it entirely depend upon the exposure?

Mr. Ripley—It would depend very largely

on the exposure. Pyro acts as a restrainer and there is no use of using more pyro than is necessary. Pyro alone does not necessarily add density; you must have something to push it. And in answer to Mr. Scripture's question as to what other advantages the sulphite has, it is that it keeps your plate from discoloring. That is, if you develop your plate with simply pyro and alkali you will have a yellow negative, but if you put sulphite in the mixture the negative will be more nearly black and white.

Dr. JANEWAY—Is there any other gentleman who desires to make any remarks on the subject?

There is still one other question, I believe, that the Question Box Committee has from Mr. Roosevelt, and then the box will be empty, and we would like to have some more. I have the question here and I will read it, and it will take but a short time to finish it up, and I shall call on Dr. Piffard, if he is here, to respond.

This is the question that has been propounded by Mr. Roosevelt: *Photographic solutions will destroy a tin roof through the paint, often without greatly affecting the latter. Will they also injure lead or iron waste pipes?*

Mr. ROOSEVELT—I just wish to make one statement before the discussion commences on this question. The waste water from my tank in the country ran out on the roof and it ate up the tin roof and I had to have a new roof put on; the whole tin roof was destroyed. It went through the tin and ran down in the gutter and lay there for a little while and destroyed the entire gutter. The question that occurred to me was whether it would eat up the waste pipes in the city in the same way.

(Dr. Piffard stated in substance that in his opinion it would have no appreciable effect on iron or lead waste pipes.)

Mr. RIPLEY—When I first commenced photographing I worked in a bath tub, and my wife called my attention to the fact that the tinning on the copper bath tub—or, rather, I called her attention to it—was wearing off, and blamed the servants for scouring it with sapolio; but I found that the hypo had eaten the tinning off my copper in the tub the same as it did in Mr. Roosevelt's case. It eats the tin off and the whole thing rots; but as to its influence on the plumbing, I don't think it would affect lead. It would affect the solder if it got at it.

Dr. PIFFARD—The only part that would be affected would be where the two metals or substances came together. My bath tub is of zinc, but I could never find that there was any loss of the material due to the causes which you suggest, and I never had any trouble with my lead pipes or with my iron waste pipes.

For Mr. Roosevelt's information, I will say that I have been struggling with this matter for the last fifteen minutes to see how we could make up a developer of 480 grains, and I find that it would require four different weights to do it: an ounce, half ounce, dram, and scruple, and there is not such a set to be found on these premises. It is better to leave them as they are, unless we adopt the metric system.

A *Member*—It is the confusion of the formulas that the gentleman exposed, and not the plan of the formula.

Mr. WALKER—What would be the result if this association should undertake the effort of introducing the metric system among those druggists who put up photographic materials? Suppose we should pass a resolution to that effect and have it circulated among the various manufacturers of these materials which we use, do you think that they would pay any attention to it?

Dr. PIFFARD—There would be no advantage in it.

Mr. WALKER—One day we have 437½ grains to the ounce and the next day we have 480 grains to the ounce. You don't know whether you have an ounce of 437½ grains or 480 grains; you don't know what you have.

Dr. PIFFARD—The advantage of the metric system is simply the percentage. It gives you at a glance the percentage of anything and everything, whether one per cent. or two per cent. or any per cent. You glance at it and it tells you whether you have five per cent. or ten per cent. of pyro, sulphite, or anything else. If we can reduce our formulas to percentages we will have it simplified.

Mr. WALKER—These formulas which we have, say, "put in an ounce of pyro to such and such a quantity of water." You don't know whether you have 480 grains or 437½ grains. You cannot tell anything about it. That is your objection, is it not, Mr. Roosevelt?

Mr. ROOSEVELT—No, sir; that is not my sole objection. My purpose is a practical one, that we should endeavor to establish some general system of making the developer, like the system of making it up into ten ounces of solution. Take it any way you want, but we should have some fixed amount. Then, if another gentleman disagrees with Mr. Ripley, and says you ought to have ten grains of pyro to the ounce of developer, we would know what we were doing and what we were talking about.

Dr. PIFFARD—Take for instance Mr. Ripley's formula: "Sulphite, three ounces troy; water, ten ounces," and say nothing of the other. You will find that he has got 30 and $\frac{13}{100}$ per cent. of sulphite.

Mr. RIPLEY—No, sir; I beg your pardon, it is exactly 30 per cent.

The meeting at 10.20 P. M., then adjourned.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—A. T. S. writes: In your directions in answer to M. R. J. in last BULLETIN, you say mount the pictures so that the center of each comes opposite the center of the lens. You do not say how far they should be separated, and is not the limit three inches?

A.—Our correspondent is right; we omitted to note that the pictures should not exceed three inches from center to center.

Q.—E. B. writes: Is there any way to register the lowest temperature without sitting up all night to watch the thermometer? I have been asked several times if it could not be done by photography. I made several trials but have not succeded very well. I am of the opinion that a thermometer can be constructed to register upon a sensitive plate the lowest temperature attained.

A.—We know of no good method of registering temperature photographically; the best way is to use maximum and minimum thermometers. The maximum one will tell you the highest temperature reached by the mercury in it, while the minimum contains alcohol which registers the lowest temperature attained. In each case a suitable index is arranged, and it is very simple and easily managed.

Q.—J. T. R. writes: Will you please tell me, through the columns of the BULLETIN, how to print on linen and silk?

A.—Size the fabric with a solution of gelatine, two or three grains to the ounce. When dry salt it in a solution of ammonium chloride two grains to the ounce and dry again, then float on a silver bath, dry, fume, print under negative, tone, fix, etc., as with paper, using hot water for last washing.

Q.—A. W. writes: I come again to the BULLETIN for information. I make my own dry plates sometimes for views, and although I follow the same formula that gives me fine plates generally, sometimes it does not. They do not fog, but they lack vigor; the developer does not seem to take hold of them. They also fix slowly and the fixed negative is coarse-grained, looking like a negative from a copy. My formula is:

Ammonium bromide	210 grains.
Water	3 ounces.
Silver	330 grains.
Water	3 ounces.
Soft gelatine	120 grains.

When warm I add the silver in a fine stream, with stirring, into the bromide and gelatine, to which I have added one fluid dram of alcohol, and boil thirty minutes. The silver is neutral; the bromide is acid, with a trace of hydrobromic acid to turn blue litmus paper slightly red. To the above I add enough gelatine and water to make 18 ounces. Where do I fail? I have tried adding a grain or two of potassium iodide but saw no improvement. Can you tell me the cause of failure?

A.—We have had no experience in making dry plates, it is far too troublesome when such good ones can be bought ready prepared. But from our knowledge of the work of others we should say that your method needs revising very much, and the best thing you can do is to read Dr. Eder's book on "Modern Dry Plates," where full directions are given for plates suited to many purposes, and much more satisfactory information than we can give in the limited space of these columns.

Q.—M. R. incloses a print and writes: Will you give me, through the columns of the BULLETIN, your opinion of this picture. It was made on a dull cloudy day with a rapid hemispherical lens—exposure 2 seconds, and ammonia developer.

A.—The print sent us is an example from a badly over-exposed negative, probably from the use of too large a stop. As the kind of plate used is not mentioned, we cannot judge about the time necessary; but two seconds appears much too long a time with slow plates if the stop is a large one.

Q.—G. N. C. writes: Can you inform me, in your next issue of the BULLETIN, the method or way of photographing on wood suitable for engravers to work on.

A.—See BULLETIN, page 76, February 12, and page 107, February 26, 1887.

Views Caught with the Drop Shutter.

WE are in receipt of a letter from Mr. CRAMER wherein he states that he is determined to have his plates sold to the consumer at same prices as other brands, but that he will not allow his reputation for maintaining the highest standard of excellence to suffer in the least. A trial of his latest plates will establish the truth of his assertion, that they are better than ever before. His new system of making plates of all desirable degrees of rapidity will be appreciated.

MR. DAVID TUCKER is erecting a fine new building on Court street, Buffalo, adjoining the Burt property, on the corner of Pearl street. M. E. Beebe & Son are the architects. It will be fifty feet wide, six stories high, with a handsome iron front, and divided into two stores. Iron columns and girders render it fire-proof. There will be a broad entrance in the center of the building with elevator and stairs to the top. Also a large freight elevator, run by electricity, in the rear, with easy access from Burt alley. Also a deep, well-lighted basement under the entire building and sidewalk to the curbstone. The whole building will be heated by steam, and have all modern improvements, and when finished a part of one store will be occupied by David Tucker & Co. for their wholesale and retail photographic trade. The remainder of the building will be for rent, and well adapted to either wholesale or retail business. The upper floors will be suitable for manufacturing or other business purposes.

A COPY of the last issue of the photographic catalogue of J. C. Somerville just received. It is fully in keeping with all the catalogues received from our Western friends, containing prices, descriptions, and illustrations of all articles pertaining to photography. Typographically perfect and beautifully bound, it is well worthy of the house from which it is issued, and will be of great help to the photographic purchaser.

We learn that HENRY D. MARKS, of Rochester, N. Y., has just moved into a large and elegant store, a great improvement upon his old premises, as it gives him plenty of room for the exhibition of photographic goods. One noticeable feature is a large glass room, equivalent to an immense show-case, for the exhibition of apparatus and to keep it free from dust. This case contains a large number of the products of the factories of our publishers, showing that Mr. Marks looks after the interests of his customers and is up to the times.

ROBERT DEMPSTER, of Des Moines, Iowa, has just issued a new catalogue of his extensive line of photographers' supplies. It is a handsome small quarto volume of about a hundred and fifty pages, finely printed and beautifully illustrated with all the latest devices for the practice of the photographic art, and is fully up to the best catalogue we have seen.

BENJAMIN FRENCH & Co., of Boston, Mass., have sent us their new price list of Voigtlander and Darlot lenses. It is neatly printed and illustrated, and will be useful for reference.

OUR good friend E. K. Hough, now located in Tennessee, has been surprising our Southern friends with some of his fine colored crayon work. We are very glad to hear of his success, which is noted in the local papers. As an artist Mr. Hough has an unquestioned reputation, and his writings upon art in photography are well known to our readers.

WE notice the popularity of our publishers' apparatus by the representations of the same in some catalogues with the name of other manufacturers substituted for theirs in the cut describing it.

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NEGATIVE ON
STANLEY DRY PLATE.

A Pastoral Study.
BY
W. H. Mapes
Newburgh, N. Y.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MAY 14, 1887. Vol. XVIII.—No. 9.

THE CHICAGO CONVENTION.

FROM all sides we hear that the coming meeting of the Photographers' Association of America will be interesting in a great many ways. In the first place every effort is being made to have a fine exhibition of pictures, which will certainly be as good as at St. Louis (which was grand), and probably better. Mr. Gentilé, the Local Secretary, is determined to have this an art exhibition this time, and we heartily wish him every encouragement. There must not be any advertising on the pictures if the exhibition is to be visited by people of taste and culture.

And there should be nothing that could in any way influence the judges in their decisions upon the merits of the various pictures. We are satisfied that by adhering to the rules laid down by the Executive Committee a first-class exhibition will be the result, a credit alike to both the exhibitors and the management. Furthermore, there are many photographers who will exhibit under these conditions when they would not show a single picture if they find the hall nothing but a vast exhibition of advertising cards. But our readers can rest assured that Mr. Gentilé will carry out the rules laid down.

We therefore urge our readers to send some of their best work to the Convention in August, and let it stand on its merits. If your work is good you will most surely get your reward; if it is below the average it is well you should find it out, and this last can be done only by comparison with the work of others. Depend upon it there will be no poor work that will obtain a prize this year, and it will be hard for good work to miss one.

There is another feature in this year's Convention that ought to bring out the genius of some of the readers of the BULLETIN, we mean the prize for the best invention in photography made during the past year. Those of you that are never satisfied with your apparatus as you find it, will have a chance to get a reward for something new if you will send it to Chicago. It also appears to us that this will be an exceedingly interesting part of the exhibition to all those who go there, and will show the development of inventive genius in photographic mechanism and devices during the past year.

There are also among the members of the association men (and women) of observation and thought who can give us papers. These should now be getting their material into shape for presentation at the sessions of the association.

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There is too much inclination to look to the photographic editors for papers at the Convention. This is a great mistake, because if the editor is to do his readers justice, he has little time for work outside the columns of his journal. Therefore the members who can give their impressions upon photographic subjects should do so and present them at the meetings, where they can be discussed, and a general average idea of the subject obtained by the union of the various points of view.

Again, if possible go to Chicago personally; it will do you good to take a week off from your work, no matter how busy you are. A week away from the daily routine; a week with as genial a set of men as ever followed a single profession; a week among new faces and new scenes, will give you a fresh start in life and make you feel better and happier for a year after. Go to Chicago on the 9th of August and you will not regret it. And don't forget to take some pictures with you, if only a dozen cabinets; they will be appreciated, and, if good, will obtain a medal.

The manufacturers too are also going to help the Convention with special prizes. Several hundred dollars in prizes of this character are already announced and more are coming. These prizes will be for special work on plates or paper, or with lenses, and should bring out a lot of good work. But remember no marks will be allowed on pictures in the exhibition, the distinguishing marks being in the hands of the manufacturers only. So it appears that quite a number of members of the association can go to Chicago and bring away a cash prize that will more than pay their expenses. But even if you only get a bronze medal you will be pround of it, for it will most certainly be a reward of merit.

A large exhibit of pictures from Europe is also expected, and will prove a most useful education to the photographers who visit Chicago—a comparison of styles and methods always leading to improvements.

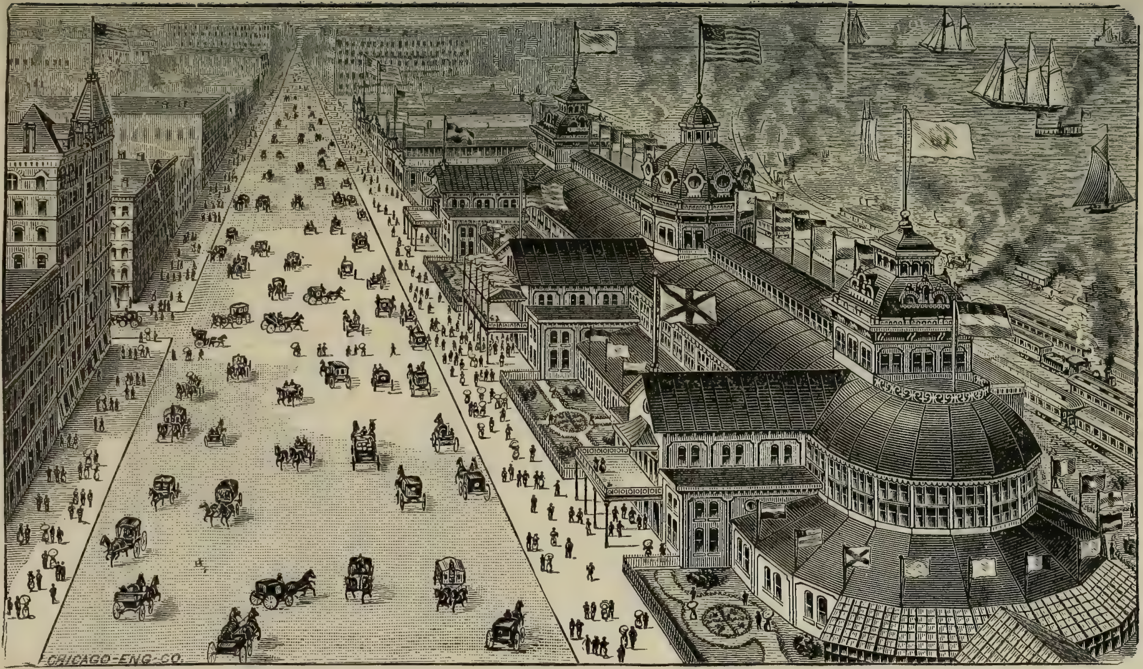
We give on opposite page a picture of the Exposition building where the Convention will meet in Chicago, and we urge our readers to meet us there August 9th to 12th next.

◆

About this season of the year the light usually reaches its maximum in actinism. Every experienced photographer knows quite well that the briefest exposures are obtained after a sharp April shower has passed over. Not only is a shorter exposure secured, but, in the opinion of many, a sharper, crisper, and a more brilliant picture is obtained. Beginners in landscape photography are apt to be misled, as to future work, by the light under the existing conditions. An apparently fully-timed negative may now be taken with a very short exposure, owing to the trees being devoid of foliage and the branches and twigs standing in bold relief against a bright sky as a background. But, later on, when the trees are covered with leaves, the light, though to all appearance as bright or even brighter, will be less actinic; then similar exposures will prove totally insufficient to obtain good negatives.—*British Journal of Photography.*

◆

There is always something in the Bulletin to keep a fellow thinking. It is O. K. success to you all. W. L. Cheney.


CHICAGO-ENG-CO.

CHICAGO EXHIBITION BUILDING.

Meeting place of the Photographers' Association of America, August 9th to 12th next. Birdseye view from the Leland Hotel.

EDITORIAL NOTES.

Professor W. K. Burton, the well-known English photographer, on his road to Japan made a short stay in New York City, and was entertained during his visit by a number of the members of the New York Society of Amateur Photographers. In addition to being an eminent photographer he is also a sanitary engineer, and was greatly interested in the sanitary work of New York City. He visited the School of Mines, Columbia College, where he met Professor Chandler, and saw the various museums and the methods of instruction. Every effort was made to make Professor Burton's stay in our city interesting, and we all hope he will find it convenient to visit us again in the future. In the matter of photography we found him as fascinating as a talker as he is as a writer, and enjoyed his short stay with us very much. We call attention to the notice on another page of the dinner given in his honor.

The American Association for the Advancement of Science will meet in the City of New York for one week, beginning August 10th next. Committees of the various scientific societies of this city and vicinity are now arranging for the entertainment of the members, and we have no doubt the proceedings of the various sections will be interesting. The section in physics takes notice of the subject of photography, and we recommend our photographic brethren to attend its meetings when our art is under discussion.

We have recently seen a couple of large handsome pictures made by the aid of the electric light, by Falk, the well-known New York photographer. These were stage scenes in two acts of the play of the "Old Homestead," in which Denman Thompson is such a prominent character. One represents a scene outside Grace Church, New York City, and the other the interior of a drawing-room. The views are particularly life-like and perfect; far more so than the pictures usually taken by the aid of the electric light. We must certainly congratulate Mr. Falk upon his great success. The work is excellent in every way.

Instantaneous photography has recently made another capture, this time a rifle bullet in its flight. Dr. Riegler, of Pesth, has succeeded in obtaining a picture of a bullet from a Werndl infantry rifle which was traveling at a velocity of 440 meters (about a quarter of a mile) per second. The picture is said to be particularly perfect.

The Columbia College Amateur Photographic Society had an interesting exhibition of lantern slides the other evening, and quite a number of excellent slides made by the students were thrown on the screen. Those that were most to be admired were the work of the Stoughton Brothers, Mr. Stanton, and Mr. Dodge, each of whom exhibited slides that, in addition to being good from a photographic point of view, were very artistic. Mr. Tiemann had a number of slides that were made with the vest camera, but we cannot say that we admired them. This was not owing to lack of skill on the part of the maker of the slides, but rather to the small size of the picture, which, when projected, was only about two feet in diameter and lacked detail. Mr. Tiemann had one of the best slides of the evening, a lady coming down some old wooden steps embowered in foliage; this was particularly interesting from an artistic point of view, and spoke well of the good taste and fine feeling of the exhibitor. Dr. John Habirshaw also added to the evening's entertainment with a number of his exquisite slides of Californian scenery, which were greatly admired. Mr. D. L. Elmendorf's slides of the Mammoth Hot Springs and the curious geological formations that surround them also called forth much applause. Dr. L. H. Laudy also contributed a number of his interesting slides of Nova Scotia. Altogether the evening was a thoroughly enjoyable one, and we hope our young college friends will repeat it on some future occasion. They certainly have the ability to do so.

DR. PHIPSON in his letter from England to *Le Moniteur de la Photographie* states that W. K. Burton is going to Japan to take a chair as Professor of Photography in the University of Tokio. M. Leon Vidal takes this statement as a text to read a homily to the French government on their lack of recognition of our art in their colleges. The homily may be good, but the text is wrong—W. K. Burton goes to Japan as Professor of Sanitary Engineering.

DR. J. M. EDER AND HERR WEISS, the director of the observatory at Vienna, were delegates from the Austrian government to the astronomical conference held in Paris to consider the project of photographing the heavens. Captain Abney was the delegate from the English government.

J. B. OBERNETTER, the well-known experimental photographer, died suddenly in Munich on April 13th. He was a comparatively young man, being only 47 years of age, and leaves a wife and six children. His reputation is world wide, and every progressive photographer will regret his death and sympathize with his bereaved family.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Sensitiveness of Platinum Paper—On the Action of Chlorine and Sulphureted Hydrogen on Platinum, Eastman and Ordinary Albumen Prints—Toning Eastman Prints—Printing with Carbonate of Ammonia—Blunders in Orthochromatic Photography—What is Azaline?

A GOOD deal has been said lately in the photographic journals about platinum paper and platinum pictures, favorable and unfavorable. But that, all objections to the contrary, the platinum process is gaining ground more and more, is a decided fact. Not so much yet for portraiture, but surely among amateurs, and artists prefer it to the ordinary albumen process. It is much simpler than the latter, requires no toning bath, no fixing solution, and is considerably more sensitive than a silver print. The sensitiveness differs a little among the several kinds of platinum paper. Ordinarily the opinion prevails that the carbon printing process surpasses the platinum process in sensitiveness. But the latest observations in the photo-chemical laboratory of the Royal Technical High School here have demonstrated that the reverse is the case. My son experimented in regard to this with the photometer, and found that under the same negative carbon paper required 17 degrees Vogel's photometer, while 16 degrees were sufficient for platinum paper. Thick negatives required with carbon paper 24 degrees, with platinum paper 22 degrees. This shows conclusively that platinum paper is five-fourths more sensitive than carbon paper, and that can be called an advantage.

My son has also made some tests lately in regard to the durability of platinum and other photographic pictures, and has obtained several results which may be of some practical importance. At first he treated platinum, Eastman, and ordinary silver prints with chlorine. Moistened albumen and Eastman prints disappeared almost instantaneously in this (the metallic silver being turned into white chloride of silver). In a dry state they kept for about ten minutes, the albumen picture disappearing first. A platinum print, either in a dry or moistened condition, was not affected in the least by the chlorine, even after several hours.

These pictures were now exposed, partly dry and partly in a moist state, to the action of sulphureted hydrogen for 24 hours. Here the moistened albumen print showed a visible bleaching and yellow coloration after several minutes, and disappeared finally almost entirely, the whole paper assuming a dirty yellowish color. Moistened Eastman paper showed only slight traces of yellow, but moistened platinum paper appeared completely brownish-yellow, even the back part of the picture; although the black parts of the picture, consisting mostly of metallic platinum, had not suffered, the details in the high lights also remaining, so that only the ground of the paper appeared to be changed by becoming yellow.

In a dry state the albumen picture commenced in half an hour to become yellow, but kept better than the wet one. The dry Eastman picture seemed to be very little affected, even after 24 hours, and the dry platinum one remained completely unchanged. These observations confirm those in respect to platinum paper already published in this journal about the yellow coloration, but refer only to moist and not to dry paper.

It has been asserted that the iron salts contained in the platinum paper are the cause of this yellow coloration. To make sure about this point, the following tests were made by my son.

First.—He exposed a piece of raw gelatine paper, such as serves for the preparation with platinum, in a moist state to sulphureted hydrogen. It suffered no change after 24 hours.

Second.—A piece of gelatinized paper was coated with ferric oxalate, and another with platino-chloride of potassium, and these were placed, unwashed, moist, in a bottle with sulphureted hydrogen. The iron paper pretty soon assumed a rusty brown color upon the coated side, but the platinum paper was colored coffee-brown throughout.

Third.—Two papers prepared as above were treated, after drying, with a hot solution of oxalate of potassium, bathed ten minutes each time in three muriatic acid solutions of 1 to 80, and finally washed for three-quarters of an hour in water. Then while still moist they were placed in sulphureted hydrogen. The paper prepared with ferric oxalate was still completely white after 24 hours, but the one prepared with platino-chloride of potassium had a distinctly brown color. According to this it is not the iron, but the platinum salt which gives the yellow or brown coloration to the platinum pictures.

This demonstrates that the gelatine, even after protracted washing, will hold traces of the platinum salt. The platinum pictures mentioned were made upon paper prepared with gelatine. He now took paper prepared with arrowroot, sensitized with platino-ferric oxalate, and pictures printed upon the same, and exposed them, moist, to the sulphureted hydrogen. They assumed a very light grayish tone, which had not the least resemblance to the brown tone of the platinum paper prepared with gelatine.

If therefore arrowroot paper is used for the preparation of platinum pictures, the durability of the same is certain, and it is to be recommended, as the pictures have a more agreeable brown tone than those upon gelatine paper. We use here the Steinbach paper, sized with arrowroot.

Although according to this test with sulphureted hydrogen the Eastman paper stood the ordeal pretty well, I would like to add that prints made upon the same paper and exposed in the show window, particularly under the action of sunlight, will show a decided yellow coloration after four weeks.

Complaint has oftentimes been made about the cold tone of the Eastman pictures, but it is not difficult to give the same an agreeable brownish color. The toning, of course, is not done with gold, but with nitrate of uranium and red prussiate of potash solution, similar to that applied first by Selle, of Potsdam, for the strengthening of collodion plates, and it is particularly remarkable that not only Eastman paper, but also platinum paper will assume an agreeable brown tone in the uranium mixture. A mixture of equal parts of nitrate of uranium, 1 to 100, and of red prussiate, 1 to 100, is prepared, into which the pictures are plunged for about one minute. But I must remark that the pictures have to be well washed before the toning, and that cleanliness of the hands is the first condition for obtaining blameless results. Such pictures should also not be washed too long after toning, not more than half an hour. If washed too long they will lose their color, because the brown precipitate (ferricyanide of uranium) is somewhat soluble in water.

In your valuable journal I have read an interesting communication from my esteemed friend Professor Rood about the fuming of sensitized albumen paper with carbonate of ammonia. This method is good, but not new. I applied the same seventeen years ago and showed that paper treated with carbonate of ammonia will give more brilliant prints than those not fumed. This applies of course only to paper silvered in a weak silver bath (25 grains per ounce). I used little bags filled with the carbonate and placed in the printing frames, and have also described the manipulation in the *Photographisches Mittheilungen*, Vol. VII, page 272, and Vol. VIII, pp. 11, 84. At that time the late Mr. Baden Pritchard saw it in my laboratory. He introduced it in the Royal Arsenal at Woolwich and described the process in the *Photographic News*. Quite excellent prints are obtained upon albumen paper, dried and washed after sensitizing. This can be kept for weeks. By itself it is not very sensitive, but if copied in the printing frame with carbonate of ammonia it will give handsome prints in less time than ordinary sensitized albumen paper.

In your issue of February 26th, I notice that Dr. Ehrmann tries to excuse the blunders he made in regard to orthochromatic photography (BULLETIN, February 12th) by calling them printer's mistakes, asserting that the printer put in "for the depression in red" instead of "increased action in red." I congratulate the learned Doctor for the discovery of this blunder. I have been writing for journals for 25 years, and it has occurred oftentimes that the printer might mistake *feed* for *feel*, *light* instead of *night*, but "increased action" instead of "depression of," that is something new to me. This printer's error should be placed in some curiosity shop for exhibition.

The article "The Composition of Azaline" in a contemporary, with printer's errors in galore, is perhaps from the same pen. The author speaks of two absorption bands shown by azaline in the spectrum, whereas in fact it shows *three.* (Vogel, "Photography of Colored Objects," p. 100. Berlin, 1886.) It is further asserted that Drs. Mallman and Scolik had at last succeeded "by indefatigable labors in separating the mysterious dye into two distinct substances—chinolin red and chinolin blue." To this I have to remark that the analysis of azaline is child's play, as three months before Mallman and Scolik's publication, Dr. Witt, of Berlin, published a method of the analysis of coloring matters in which the recognition of the chinolin coloring matters stands at the head. The formula is so easy that even a non-chemist can understand and apply it. "No indefatigable labors" are needed, but about ten minutes' work. The Berlin chemists understood the composition very well after Dr. Witt, without discovering in the analysis more than a plaything. In regard to the price, I would draw attention to the fact that impure chinolin red can be produced very cheaply, but that the pure will always command a high price.

* * *

[*From our Special Correspondent.*]

ENGLISH NOTES.

CONVENTIONS are the order of the day. Some of our best men, astronomers and photographers, are now in Paris, including the Astronomer-Royal (Mr. Christie), Captain Abney, Professor Pritchard, General Tennant, and Messrs. Knobel and Common, taking part in the conference which is "lotting out the heavens" and arranging for the production of a series of star maps, obtained by the aid of cameras combined with telescopes, which shall far surpass in accuracy, and the number of stars represented, all previous attempts. By the united work of the observatories of all countries, it is estimated that the entire sky can be charted in this way in about fifteen years, and that the negatives will contain the impression of about fifteen million stars. But the number of stars represented on a plate must depend on the power of the telescope. Your gigantic Lick telescope, with its three-foot object glass, will show stars probably down to the twenty-fifth magnitude; and it is easy to conceive, since space is infinite, and the number of stars in any given direction must be infinite also, that given a telescope of sufficient power, the image of the various stars would cover the entire plate, overlapping one another so as to give the effect of a uniform glare of light.

As photography advances it attracts to its ranks more and more of those who have already had some training in science. Moreover, its ordinary devotees become tired at some time or other of following the beaten track, and desire to experiment on lines somewhat removed from the routine of every-day work. To such I can recommend the powder process, which I have lately been working with success. Mix together in a thin glass vessel the following substances:

Gum arabic	1	dram.
Glucose (grape sugar)	¾	"
Glycerine	10	drops.
Bichromate of potash	30	grains.
Water	2	ounces.

Stand the vessel in hot water until all the ingredients are dissolved, and stir well; then filter the mixture into a glass-stoppered bottle, round which brown paper has been pasted to protect the contents from the light. Next thoroughly clean a glass plate and flow it over two or three times with the above solution, pouring the liquid upon the center, letting it run over the plate, and then pouring it off at one corner. Dry the plate by heat over an air-gas flame or spirit lamp. When thoroughly hot and dry place the film in contact with the negative or positive you wish to reproduce (it is perhaps well to interpose strips of thin paper round the edges to prevent any possibility of sticking), just as you would ordinary sensitized paper in a printing frame, and expose to sunshine for a couple of minutes, or to diffused light for ten minutes. When removed from the frame the image should be faintly visible when the plate is placed on white paper. If the weather is dry, leave the exposed plate for ten minutes in a damp place, and then dust it over with very finely powdered black-lead (that used for electrotyping is best) by means of a camel-hair brush. The black-lead adheres to those parts of the plate upon which the light has not acted, and thus we get a negative from a negative, or a positive from a positive. After development expose the back of the picture to light for five minutes, and then wash for ten minutes to remove the unaltered bichromate, etc. By coating the glass plate with collodion before flowing the solution over it, and again after development, but before washing, it is possible to remove the entire picture from the glass and use it as a film negative. A most valuable application of the above process is in the improvement of thin negatives. Apply the coating to the back of the glass plate bearing the negative and proceed as usual; print in diffused light under a piece of ground glass.

We are about to lose one of our best experimental photographers. Mr. W. K. Burton has been appointed Professor of Sanitary Engineering in the University of Tokio, Japan. At a dinner given in London he received a hearty "God-speed" from his assembled friends, together with a handsome present.

A Scottish artist of high rank who affects the company of photographers, Mr. Norman Macbeth, has recently delivered a tirade against all the "devices" and "tricks" of our art. Double-printing, retouching, putting in clouds, etc., he regards as abominations, and will have none of them. Surely this is a case of pot abusing kettle for its nigritude. No workman knows so many "tricks of the trade" as the skilled painter; and if we praise the "magnificent technique" of the French and Belgian schools, why should we withhold a like meed from Rejlander, Robinson, or Diston? No limits can or should be set to art in photography. It is the finished photograph that must be criticised and not the means that have been used to produce it.

Is anything done in ceramic photography in the States? As I write there lies on my table an admirable specimen of a photograph burnt into china, executed by Bridgewood & Son, of Longton, Staffordshire. It is as beautiful as imperishable, and when placed in a suitable plush frame might fitly ornament any room. The firm undertakes the reproduction, quite cheaply, of pictures in any tint, and from negatives of almost any size.

When Fox-Talbot issued his "Pencil of Nature" in 1845, he considered that it would be but the first of a long series of books to be illustrated by direct photographs, and it is true that during the next twenty years many expensive works illustrated in this way were published. But the photographs faded, purchasers were disgusted, and publishers withdrew from such ventures. Owing to the introduction of methods, such as carbon printing and platinotype, which yield results of undoubted permanence, and of various photo-mechanical methods which reproduce pictures very cheaply, photography is once more coming to the front as a means of illustrating books. All your great libraries ought to possess a book about the "Norfolk Broads" written by Emerson (photographer) and Goodall (painter) which has just appeared; its reproductions of Emerson's fine photographs are superb.

To bring out the finest properties of a photograph it should be mounted on glass. Swell an ounce of gelatine in an ounce and a half of cold water, then dissolve by placing the bottle in hot water; warm also the glass plate on which the picture is to be mounted. Now lay the photograph in the hot gelatine solution to soak, and then place it in position upon the glass plate, squeegeeing it down and removing the excess of gelatine. For all such work I prefer a squeegee made by passing a piece of glass rod or tubing half-an-inch in diameter through a piece of pure black rubber-tubing of the same bore. The picture is ready for framing as soon as dry. The "Aristotype" paper has already a gelatine surface, so that it simply needs well wetting, after which it is ready at once to adhere to the glass.

How well cycling and photography go together. Here every third cyclist is said to be a photographer. Surely cycling is equally good for photographers. I have lately invested in a light "Cripper" tricycle, on which, with a half plate equipment, I can cover with ease thirty miles a day. "Go and do likewise" is the advice of TALBOT ARCHER.

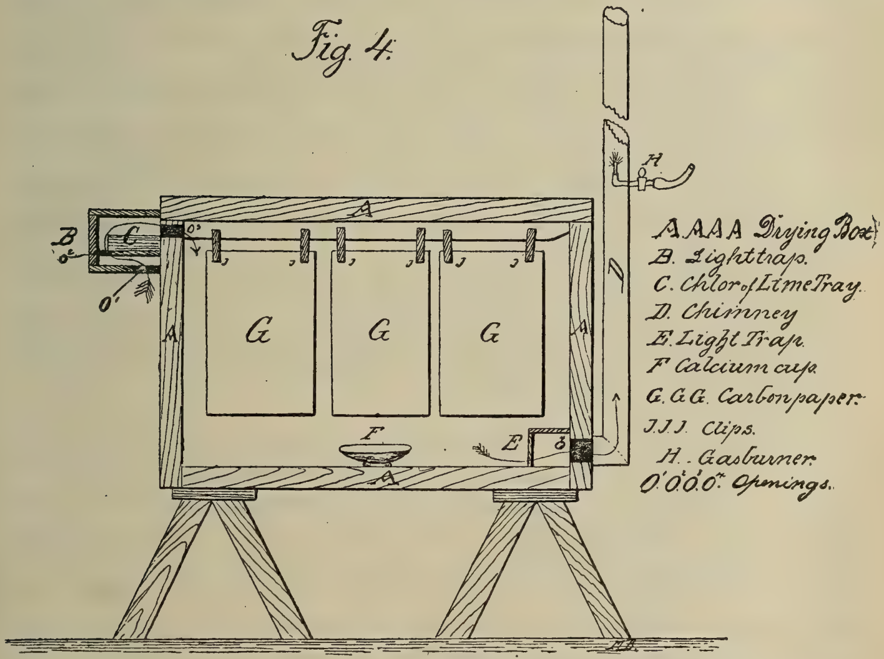
CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued.*)

Drying Box.—For those who cannot arrange a special room (well ventilated, dry, and not in too close proximity to a kitchen, stable, etc., as mentioned already), a contrivance like this will enable them to take up this fine process. A somewhat detailed description and illustration are necessary (see Fig. 4). The box, *A A A A*, should have the following dimensions: Length, 3 to 3½ feet, breadth, 2¼ to 2½ feet, height, 2¼ to 2½ feet. The boards ought to be one inch in thickness, well joined, and, of course, perfectly light-tight. A door must be provided opening the whole length, and fitting perfectly light-tight also. At one end of the case, as near as possible to the top, make an opening, O^3, say ¾ inch by 2 feet, parallel with the top, and place before it a light-trap, *B*, as indicated in Fig. 4. This trap can easily be made by any one who possesses a pocket-knife, some nails, and a glue-pot. The arrow in the drawing indicates the course of the air (passing through openings O^1, O^2 and O^3, which are all three of same length and breadth), and the black spots show where the openings should be made. There must be provided a board on which the zinc tray *C*, can rest, which must be filled with chloride of lime. A door must also be made by which this tray may be introduced and withdrawn, of course also light-tight. As the tray is rather long, it will be best to make the door at the smaller end of the light-trap and at its front. Also make a hole, O^4, opposite and diagonally across from the former, *i. e.*, at or near the bottom of the case, *A A A A*. This hole should be round and of 3 inches diameter. Attach to it the chimney tube, *D*. This tube must have an elbow and a perforation at the height of the top of the case or above, for the introduction of the gas-burner. If no gas can be obtained, the tube should be provided with a drum or a cone, and in it should be placed a kerosene lamp, resting on a cross-bar at about one inch from the bottom of the drum. The area of the tube should exceed that of the opening, O^3, coming from the light-trap, *B*, in order to produce a stronger draught. There should be placed a light-trap, *E*, before this outlet of the air in order to prevent any light rays proceeding from the burner in the chimney entering the case. It is sufficient to join two small boards of say 10 by 4 by $\frac{1}{8}$ inches lengthwise together and place them before the opening inside of the case. Now extend some copper wires parallel with the front side of the case and at about three inches from the top, from one side to the other, and make them equi-distant from each other. For a box of the above dimensions four or five wires will be all that is required, and will

Fig. 4:



allow of hanging upon them from sixteen to twenty pieces of carbon tissue of 8 x 10 or larger, and this quantity is sufficient for one day's work. It will dry in a corresponding time, if properly managed.

The drying box should rest on trestles eighteen inches high, as indicated in the drawing. The joints of the boards should be pasted over on the interior of the case with some stout paper strips, and the front door must of course swing outward. It is good to provide the rabbets of the door frame with some cloth strips in order to exclude any dust or light which, without this precaution, might find its way into the interior of the case. The whole contrivance ought to be kept as clean and dry as possible. It is a good plan to place some heated bricks in the box from time to time and allow them to cool off. This should be done when the weather is damp, and of course by preference before the case is to be used. In the course of this treatise we shall give some more explicit instructions for the management of the drying box.

The above mentioned accessories, with the exception of the photometer, of which a description and illustration will be furnished later, are the requisites necessary. As regards scales, measures, weights, filtering and blotting-papers, etc., these are generally at hand with any photographer or amateur.

Chemicals.—There are two chemicals which play an important *role* in this process. Bichromate of potash ($K_2Cr_2O_7$) and bichromate of ammonia $(NH_4)_2 Cr_2O_7$, but as there is such an extraordinary difference of price between the former and latter, without any equivalent benefit, we shall only speak of bichromate of potash. This chemical should always be handled with the greatest care, for it is strongly corrosive. Solutions of this salt taken internally cause violent inflammation of the stomach and kidneys, accompanied by severe vomiting (yellow) and diarrhœa. Bicarbonate of soda or magnesia should be taken as soon as possible. There is not much danger, since cases where mistake has led to the taking of these solutions internally are exceedingly rare. By far the greater danger lies in the handling of the cold or warm solutions, in which the carbon printer might have to immerse his fingers and hands. It should always be borne in mind that these solutions, even if employed weak and tepid or cold, cause strong irritation of the skin, and should there be any light scratches or lesions of the skin on the fingers or hands, the inevitable consequence will be an irritation of those wounds, with sometimes very disagreable consequences and rather difficult healing. We strongly recommend not to allow the fingers and hands to remain too long in the solutions. Rubber gloves should be used. The cold sensitizing baths, although stronger in bichromate, are not as dangerous as the warm, or sometimes even hot, developing bath, for as the pores of the skin open by warmth, they are more likely to absorb the poison contained in these solutions. Avoid also contact of the eyes or nostrils with the fingers which have recently touched chromic salts.

Some months after having taken up carbon printing, I was surprised to find myself with rather disagreeable sores and ulcers, which made their appearance on my fingers and hands, and I attributed them to impurity of my blood. The physician whom I consulted admitted that he had never before seen such ulcers. Business occupations compelled me to suspend carbon printing for about two months, and the ulcers had by that time disappeared. When I again took up carbon printing, having some slight scratches on the hands which I got by playing with a cat, I noticed that they would not heal, showing much inflammation, closing at the surface and forming pus. Some dreadful ulcers appearing in much greater numbers also made their appearance, and this time they were of a far more venomous character and for weeks resisted any treatment. I decided to go to Germany and there I consulted three eminent physicians; two of them, after careful examination, came to the conclusion that my case was analagous to syphilitic disorganization. Subcutaneous injections of bichloride of mercury with a slight addition of common salt were made. One of these injections provoked an ulcer on the hip which kept me for eleven weeks in bed. Three operations were made, cutting always the borders larger and employing chloride of zinc for seventy-two hours to cauterize the bad flesh, etc. Visiting New York about a year after this experience, I learned here that the disease from which I was suffering was nothing else but bichromate of potash poisoning. The remedies given to me were sulphide of calcium (two pills of an eighth of a grain daily for one week) and phenic acid in syrup (a tablespoonful morning and evening, also for one week), and alternating these two for about six to ten months. This was in 1884, and to-day I am assured that this treatment has entirely cured me, and for more than eighteen months I have been well.

Waxing Solution.—To prepare this solution take

White (virgin) wax	1 ounce.
Benzole	100 ounces,

The wax must be scraped as fine as possible. Introduce it into a bottle, pour on the benzole and shake well until entirely dissolved. Let it stand for a couple of hours and decant the clear solution. Be sure that the bottles are absolutely clean and free from water, for the least drop would render the solution turbid. Only pure white or, still better, yellow wax, which is generally purer, must be used, for if tallow is contained in it the solution will not give the high gloss desired. If adulterated wax has been employed, an addition of one part of rosin to ten parts of wax may be used.

Collodion.—The collodion should not contain more than one per cent. of cotton and equal parts of alcohol and ether, *i. e.*, 50 parts alcohol and 50 parts ether. For those who do not know how to prepare the collodion, I will here give a convenient method. Having weighed the right quantity, open the soluble cotton and tuft it well; introduce it into a bottle somewhat larger than required, and pour on some of the alcohol. Shake well, add the remainder of the alcohol, and again shake well until you see that the cotton is perfectly soaked. Now add a small quantity of the ether and shake well; add more and shake again, and so on until all the ether has been added. Allow the collodion to stand for a couple of days, for new collodion does not work so well as old. It may be used as it is however, if desired, or, if necessary, a slight addition of carmine or aniline red may be used. These colors are first dissolved in alcohol, and of this solution the necessary quantity is added to the collodion, which after this addition is again well shaken. The collodion should either be decanted or, better still, filtered through flannel, in order to have it as clear as possible.

Alum Solution.—This is used—and cannot be dispensed with—after the development of the carbon picture, as it serves to harden the gelatine and eliminate any trace of bichromate of potash which might still be contained therein. For double transfer pictures the solution must not be stronger than 2 to 100; for single transfer it can be made as strong as 5 per cent. It is preferable to use rain water, though any water can be used, but then from three to five drops of sulphuric acid must be added in order to keep the solution clear. Before use filter repeatedly, at least three times. It is best to use always fresh solution.

(*To be continued.*)

AMATEUR PHOTOGRAPHIC SOCIETY OF BALTIMORE.

We are indebted to Mr. W. B. King for a ticket and invitation to the Second Annual Photographic Art Exhibition to be held under the auspices of the Amateur Photographic Society of Baltimore, on May 19th, in the Concert Hall of the Academy of Music in that city. Judging from the programme sent us, this will be a thoroughly enjoyable entertainment, and we are sorry that it will not be possible for us to be present. We recommend our readers in and near Baltimore to see this exhibition, and thus encourage our art in the Monumental City. The exhibition takes place in the evening at 8 P. M.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

COLONEL SIR HENRY JAMES.—*See* Scott and James.

ALEXANDER JOHNSTON (of Wick, N. B.).

1870. "On the Production of Combination Negatives." Pamphlet. Small 8vo. 6 pp. Printed at the *Northern Ensign* office, Wick. 2s. 6d.

A. H. JAPP, LL.D.

1884. "Industrial Curiosities: Glances Here and There in the World of Labor." Post 8vo. Marshall. 4s. 6d.

Third edition. Crown 8vo. (Photography, pp. 223–234.) T. F. Unwin. 3s. 6d.

I. H. JENNINGS (late Assistant Master in the High School, Nottingham).

1886. "Photo-micrography; or, How to Photograph Microscopic Objects. Also a Chapter on Preparing Bacteria by Dr. R. L. Maddox." 8vo. pp. 128. Illustrated. Piper & Carter, 5 Furnival street, Holborn. 3s.

This is really an excellent book. The bulk of it appeared in the *Photographic News* for 1885, but it has been carefully revised and extended. The chapter by Dr. Maddox—the inventor of our gelatine dry plates—is alone worth the price of the whole book.

ALFRED KEENE, Operative Chemist.

1859. "Instructions for the Successful Practice of the Fothergill Dry Process; also remarks upon the Preservative Dry Processes generally." Pamphlet. Keene, Chemist, 115 Warwick street, Leamington. Presented to purchasers of the author's collodion.

GEORGE KEMP, M.D., of St. Peter's College, Cambridge.

1863. "A Description of Certain Dry Processes in Photography, especially adapted to the use of the Tourist; with Supplementary Notice of Plans useful to the Scientific Traveler and Missionary." Post 8vo, 84 pp. J. W. Davies, 54 Princes street, Leicester square. 2s. Dr. Kemp's preface is dated from Hereford.

The inconvenience of collodion wet plates to the tourist was felt almost as soon as they were introduced, in 1851. In 1854, Spiller and Crookes used zinc nitrate, which kept the surface of the collodion plate in a moist condition for several days. Soon after Dr. Taupenet obtained sensitive dry plates by washing the surface of the excited collodion plate with water and then coating it with albumen, which was allowed to dry. Fothergill's process was a modification of this. At a later period Dr. Hill Norris used gelatine instead of albumen.

RICHARD KINGHAM.

1864. "The Amateur's Manual of Photography." 8vo. 85 pp. Illustrated. Thomas Kingham, 409 Strand. 1s.

This book reached a sixth edition in 1870. Mr. Kingham was the editor, and the book was published in connection with the *Photographic Times*, a periodical then published by the same firm. The "Manual" includes a chapter on enlarging by W. H. Warner, of Ross.

CHARLES KNIGHT (editor).

1861. The English Cyclopædia. 22 volumes. Imperial 8vo. Photography in Vol. VI, pp. 465–471. Bradbury & Evans. 12s. per volume.

GUSTAVE LE GRAY, painter and photographer, Paris.

1850. "A Practical Treatise on Photography upon Paper and Glass." Translated from the French by Thomas Cousins, lecturer on natural philosophy and practical photography. T. & R. Willatts, opticians, 28 Ironmonger lane, London. 8vo. 25 pp.

A third edition of this little book appeared in 1856. The French edition is said to have been issued in 1849, the English second edition in 1852.

This book is celebrated, because it is believed to contain the first allusion to the use of collodion in photography, and on this ground some writers have assigned to Le Gray the invention of the collodion process. But that is a very different thing and belongs to Scott Archer. I give the extract from the appendix to Le Gray's, book, p. 24, in which he mentions collodion.

"I have just discovered a process upon glass by hydrofluoric ether, the fluoride of potash and soda dissolved in alcohol, 40 degrees, mixed with sulphuric ether, and afterwards saturated with collodion. I afterwards react with acetonitrate of silver, and thus obtain proofs in the camera in five seconds in shade. I develop the image with a very weak solution of sulphate of iron, and fix with hyposulphite of soda. I hope by this process to arrive at great rapidity. Ammonia and potassium bromide give great variations of promptitude. As soon as my experiments are complete, I will publish the result in an appendix. This application upon glass is very easy. The same agents employed with albumen and dextrine give also excellent results and very quick. I have also experimented with a mucilage produced by a *fucus*, a kind of sea-weed, which promises future success. I hope by some of these means to succeed in taking portraits in three or four seconds." There are several points of startling suggestiveness in this short note.

1853. "The Waxed-Paper Process." Translated from the French. With a supplement by James How. 8vo. 23 pp., and supplement of 11 pages. G. Knight & Co., opticians, Foster lane. 1s.

The preface coolly states that the "translator has left out several passages which, though in the original, he considered unnecessary." The supplement consists of "a modification of Le Gray's process carried out with considerable success by Mr. James How, assistant in the firm of Knight & Co."

The waxed-paper process was a modification of Talbot's calotype, the paper being waxed before it was iodized. The wax stiffened the paper and rendered it semi-transparent.

J. C. LEAKE.

1872. "Cassell's Technical Educator." Series of Articles on Photography in Vols. III and IV. Cassell & Co., Ludgate Hill. 6s. per vol.

NOEL PAYMAL LEREBOURS was a Frenchman who took up the study of photography immediately upon the publication of Daguerre's discovery in 1839.

1843. "Treatise on Photography." Translated by J. Egerton. Post 8vo. pp. viii and 216. One folding plate as frontispiece containing 13 figures. Longman. 7s. 6d. This is a very good book.

Dr. Paul E. Liesegang.

1878. "A Manual of the Carbon Process of Permanent Photography, and its Use in Making Enlargements," etc. Translated from the sixth (revised) German edition, by R. B. Marston. Crown 8vo. 146 pp. Illustrated. Carbon print as frontispiece. Sampson Low. 4s.

Charles A. Long was a member of the firm of opticians by whom his book was published.

1854. "Practical Photography on Glass and Paper: a Manual containing Simple Directions for the Production of Portraits, Views, etc., by the Agency of Light. Including the Collodion, Albumen, Calotype, Waxed Paper, and Positive Paper Processes." 12mo. 48 pp. Bland & Long, Opticians, 153 Fleet street. 1s.

Second edition, 1856. pp. 76, and 18 wood-cuts.

Fourth edition, 1859.

Fifth edition, 1863.

Still later editions of this book (or at all events a book bearing the same title) were afterwards sold by Messrs. Negretti & Zambra when they occupied the same premises.

1857. "The Dry Collodion Process." 12mo. 26 pp. 5 wood-cuts. Bland & Long. 1s.

Second edition, 1857, pp. 27.

Third edition, 1858.

Dr. R. L. Maddox.— *See* Beale, L. S.; also Jennings, I. H.

A. Cowley Malley, B. A., M. B., etc.,

1883. "Micro-photography." Post 8vo. 151 pp. H. K. Lewis. 5s.

1885. "Photo-micrography, including a description of the Wet Collodion and Gelatino-bromide Processes, with the best methods of Mounting Microscopic objects for Photo-micrography." Crown 8vo. 166 pp. 28 wood-cuts, 3 plates. H. K. Lewis, 136 Gower street. 7s. 6d.

The "Photo-micrography" is really the second edition of the "Micro-photography," the title being altered so as to be in accordance with the accepted nomenclature of science.

Rev. F. A. S. Marshall, M.A., of Peterborough.

1855. "Photography: the Importance of its Application in Preserving Pictorial Records of the National Monuments of History and Art. With an Appendix containing a Practical Description of the Talbotype Process as adopted and practiced by the author during the last seven years." 8vo. 30 pp. Hering & Remington, 137 Regent street. 1s. 6d.

This is a reprint of a paper read before the "Associated Architectural and Archæological Societies of the Dioceses of Northants, Lincoln, Leicester and Cambridge," at their meeting at Peterborough, May 24, 1855. Mr. Marshall's pictures of churches, etc., appear to have attracted much attention at these annual meetings, and hence the publication of this pamphlet.

(*To be continued.*)

THE IMPOSSIBLE SHE.

BY ADELAIDE SKEEL.

Peter Van Wickle put the photograph back on the table, saying softly to himself:

"It is the portrait of my wife."

Nobody heard his whispered words above the noise of many voices, for the occasion was a scientific one, and nothing was in order but remarks on alkalies and acids, silvers and bromides, irons and oxalates. To tell the whole truth, Peter Van Wickle, who was an authority on the Stock Exchange, in this company of amateur photographers was a cipher. In fact he was storm-stayed at a country house where he had been invited to spend Sunday, and it was not his fault that he was obliged to linger over Monday. But while he looked at the snow-flakes coming down, and apologized to his hostess, Mrs. Griswold, for outstaying his welcome, to his city-bred surprise the neighbors gathered, from highway and by-way, from far and from near, to attend the weekly photographic four o'clock.

Evidently country neighbors are never snow-bound in their own houses, for these enthusiasts came in snow-shoes, in Arctics, in rubber boots and leggings; in sleighs and on foot; in gossamer cloaks and Newmarkets; under umbrellas; in clouds and veils—each and every one sheltering from the fierce elements some rare specimen of his or her skill.

Peter Van Wickle stared. He had heard of cranks, but had never eaten and drank with them before, and now there was no help. Mrs. Grisdale poured out scalding cups of tea for her guests, and in exchange they gave her such wonderful bits of news as:

"Do you know I have found a way to remove yellow stains from negatives!"

Chorus, from all:

"Do tell!"

"And I can restrain development by ——

"Bromide in a dropper?"

"Using old stock solutions?

"By adding water!"

"Not really?"

"Yes, every time."

"Blisters are prevented by ——

"Oh, by what? Tell us!"

"All the washes should be of one temperature."

"How?"

"What temperature?"

"How do you test them?"

"Is it possible?"

"Not oxalate developer?"

"I use pyro and ammonia."

"It makes me cough."

"It stains my fingers."

"It's English, you know."

Van Wickle had seen people excited in Wall street, but this was bedlam let loose, and to his limited intelligence much ado about nothing. He was soon bored beyond endurance, and to assume an interest he could not feel, he turned over a pile of curly prints, blues, browns, and grays, to find, if possible, what was actually accomplished by these zealous workers, and it was in this search that he found his wife's picture. Had he announced the fact, greater surprise would have fallen on the company than had hitherto fallen on him, for it was well known that Peter was an old bachelor. This photograph, then, was his wife *futurus esse*, and the Latin expression well suited her, since on being closely, though discreetly, questioned, Mrs. Grisdale declared the portrait to be of "some of the Seniors at St. Matthew's College over the river."

Mr. Van Wickle no longer found the five o'clock tea dull, but the amateurs contributed no part of his happiness. Several ladies pushed "sweet bits" at him; one microscopist talked of "atoms and diatoms," another told of making a dozen 18 x 22 bromide prints without a single failure, but their chatter fell on deaf ears. Peter used but one of his five senses—he feasted his eyes and starved every other faculty of his mind. "He fell in love with his wife," in the words of a popular novelist, and he fell in love at sight. The face was not remarkable for beauty nor for strength, hardly for intellect, though it was the face of a college girl, but it had the rare fascination of a mind-picture. It was a living soul. The large eyes, neither almond-shaped nor round, seemed to speak; the mouth was tender and suggestive in its vagueness of most satisfying sweetness; the nose was a marked feature, but whether aquiline or Roman, none could tell. There was considerable breadth of brow, and the hair seemed to be worn both banged and *a la Chinois* if it were possible to adopt two such different styles at once. Mr. Van Wickle, who equally hated shop-girls' curly fringes and old maids' naked foreheads, thought his wife's arrangement a miracle of taste and becomingness. He wished he could see her full-length figure, but contented himself with the grace of her shoulders, which were not distinctively broad or narrow, and with the outline of her chest, which was neither flat nor pigeon-breasted. By and by, when the discussions concerning the rival merits of pyro and oxalate waxed most earnest, he secretly slipped the unmounted print in his pocket, rose suddenly to his feet, remembered an important engagement in town, bade his hostess and her friends hasty adieux, and went out in the storm to find her.

* * * * * * * *

Had Peter Van Wickle worn the wishing cap, or stood on the wishing carpet, of course he would have gone at once to St. Matthew's College, where, as it happens, the girls do not wear, as yet, the cap and gown; have been introduced alphabetically to the members of the Senior Class, and thus met his wife without delay. And Peter was at an age when delay is fatal. His hair was worn down to his head in a spot behind; he was too rheumatic to play tennis; he read few newspapers; and he liked whist better than dancing. But alas! he had no fairy gifts, and although the trains ran out of the Grand Central Depot every few minutes; although mails traversed the distance between him and her; although a telephone whisper would reach her, and an electric message woo her, fate held him back for three long months. Of course he kept her memory green by many soul-satisfying glances at her picture, which he wore in his breast pocket, and he filled all his leisure hours planning his near future. Peter Van Wickle indulged in few day-dreams, and his visions were most matter-of-fact. He was living at the club, but he visited every available apartment house in town to choose his bridal bower. He finished up loose ends of business that he might indulge in a six weeks' vacation for a wedding journey, and he talked so much of the different lines of steamers, that the impression he meant to go to Europe grew general. He did not often read novels, but he waded through several which newsdealers recommended to him on the Elevated Railroad stands. He even went into Macy's and bought a half-dozen plush-covered bits of *bric-a-brac*, with a vague feeling he was pleasing Her, and lastly he went to Tiffany's and looked not only at diamonds, but at wedding rings. Peter was in earnest and no laggard in love. To his practical mind to woo was to wed, and ever and anon he looked at the photograph till the large misty eyes seemed to unveil sweet secrets to his enraptured gaze.

Van Wickle was not himself a college-bred man, but he was willing girls should learn the alphabet, and the idea that his wife had a liberal education doubled her value in his eyes. He was accustomed to a great deal of everything, and if a woman went in for learning he was glad she should get it wholesale. Moreover it was pleasant to think he should marry a school-girl with no Society past, spelled with a capital letter. He was himself at an age when ladies not old, yet not positively new, were given to him as partners at cards or at dinners, and he found something refreshing in the idea of enjoying for life the society of some rose-bud with all her sweetest leaves unfolded. This girl would not be like those well-worn MSS. which many editors have rejected; his eyes should be the first to read the writing on her white soul. Again he looked at the picture and said:

"It is the portrait of my wife!"

(*To be continued.*)

FAREWELL DINNER TO W. K. BURTON.

A FEW of the members of the Society of Amateur Photographers of New York gave a farewell dinner to Professor Burton previous to his departure for Japan, at the St. Denis Hotel, New York, on April 21st. Owing to the illness of Mr. Dexter H. Walker, the President of the Society, Mr. G. R. Allerton, the Vice-President, was at the head of the table. The little company consisted of the following gentlemen: W. K. Burton, G. R. Allerton. W. I. Lincoln Adams, W. M. Frisbee, F. C. Beach, Ferdinand Sands, Daniel P. Read, T. T. Eckert, Jr., Arthur H. Elliott, and George H. Ripley. After doing justice to an ample repast the gentlemen were asked to drink the health of "Our Distinguished Guest," which was responded to by Professor Burton in a few well chosen remarks, expressing his gratitude for the honor they had bestowed upon him, and his keen appreciation of the good feeling shown him by American photographers. Then followed a number of other toasts. "Our Vice-President," responded to by Mr. G. R. Allerton; "Our Secretary," by Mr. Daniel P. Reed; "Our Worthy ex-President," by Mr. F. C. Beach; "The Press," by Mr. W. I. Lincoln Adams, of the *Photographic Times*, and Dr. Arthur H. Elliott, of the BULLETIN, and "The Plate Makers," by Mr. George H. Ripley.

Professor Burton then gave his impressions of American amateur photographers, remarking that it was sometimes useful to have an idea of what others thought about us and our work. Speaking of the rooms of the Amateur Society here in comparison with those of the Camera Club in London, he said that a remarkable difference was apparent on the first visit; that is, the truly practical character of the arrangements here compared with those of our English cousins. The Camera Club rooms are fitted up for social intercourse among amateur photographers, while the American Amateur Society's rooms are fitted up with every convenience and comfort for practical work. In London it is more like a social club, in New York a well appointed dark room and accessories.

Professor Burton also spoke of his kind reception by American photographers, both professional and amateur, and said that on his return from Japan it would be a great temptation to go back to England by way of New York.

After electing Professor Burton an Honorary Member of the Society of Amateur Photographers of New York, the company separated, with the feeling that an enjoyable evening had been spent with an interesting photographic worker.

THE FIRST ANNUAL EXHIBITION OF PHOTOGRAPHS.

Third Notice.

Our attention has been called to the fact that in our notices of the diploma pictures we omitted to mention that Mr. Frederick A. Jackson, of New Haven, Conn., obtained a diploma for his silver prints as well as for transparencies. We sincerely regret the omission and hope Mr. Jackson will forgive us. The silver prints above mentioned were eleven in number and exhibited the skill of the photographer, as well as his fine artistic taste. "The Wayside Group" was excellent, the grouping, the light and shade effects, and the choice of surroundings being fine. "June Morning" and "Beside the Falling Water" were also very good; but the best photograph in the collection to our mind was the "Entrance to Yale Art School," it was as near perfect as any picture in the exhibition.

Of the other exhibits it is impossible to do justice in the limited space at our command. W. I. Lincoln Adams, of the *Photographic Times*, had a number of landscapes, scenes near Cape Cod and at Montclair, N. J., which were good photographs and showed artistic feeling.

Dr. Kirkbride, of Philadelphia, exhibited a set of pretty views on the Wissakickon, also some good architectural photographs.

Charles H. Loeber, of New York, had a neat mosaic of Water Gap scenes that were interesting, and some were quite artistic.

Daniel P. Read, of New York, showed a frame of four views, one of which was an interior taken by gaslight, and very well done. He also showed eight portraits made with side light from a window, the results exhibiting many good effects due to skillful management.

Joseph H. Burroughs, of Philadelphia, had two pictures that were excellent. "Mallard Ducks" and "In the Hay Field" were the titles, and they were very good photographs in every way.

C. R. Pancoast's pictures of Niagara Falls were capital pieces of instantaneous work and well worth study.

W. H. Walmsley, of Philadelphia, showed a bromide enlargement, from a 4¼ x 5½ negative, of Burmont Bridge, Derby Creek, Pa., which was fine, and exhibited much skill in enlargement as well as a very pretty picture.

Augustus Hemanway, of Boston, had a number of excellent pictures. "The Old Lady with Spinning Wheel" was a perfect gem, the light and shade effects being of the most artistic character.

Wilfred A. French, of Boston, exhibited a number of his beautiful Bermuda views which we noticed some time ago in the Bulletin; also a couple of fine carbon enlargements of yacht races that were very handsome pictures.

S. Storrow, of Boston, showed four capital portraits not made under skylight.

Walter K. Means, of the Boston Gaslight Company, had a number of excellent blue prints that were skillful photographs and good specimens of this kind of printing.

George H. Eaton, of Boston, Mass., had a large number of pictures of various sizes, views, portraits, etc., that were very finely done; the views exhibiting much artistic skill in the choice of subjects.

William H. Rau, of Philadelphia, exhibited a number of his European captures from film negatives enlarged on bromide paper. All were fine pictures and skillful enlargements.

Max Hansmann, of Washington, had a number of landscape pictures that were finely caught and capital specimens of photographic work.

W. B. King, of Baltimore, had a large number of pictures, groups and landscape subjects; all of which were of the highest order of merit.

Miss Kate M. Beattie, of Little Falls, N. J., exhibited nine views that were very good photographs and well chosen subjects.

The Photogravure Company of New York had three frames filled with choice specimens illustrating the application of the various photo-mechanical processes they use. It is needless to say they were fine pieces of work, and artistically executed and grouped. The illustrations of the application of orthochromatic photography were very interesting.

W. M. Whitefield, of the School of Mines, New York, had half a dozen gems of scenery, showing good artistic taste and much photographic skill.

Mrs. George A. Strong, of New York, exhibited seven photographs of views and groups that were excellent.

C. W. and A. A. Stoughton, of the School of Mines, had several specimens of their fine work, the snow scenes being especially good.

John T. Granger, the Secretary of the New York Society, had a number of good views, the best of which were scenes on the Bronx, and an architectural study.

J. W. Taber, of San Francisco, exhibited a fine portrait—a single picture, but good in every respect.

José X. Arosemena, of New York, had ten pictures of portraits and studies, taken by side light, that were capitally done.

(*To be continued.*)

[*From British Journal of Photography.*]

A SUGGESTION FOR AN ALTERATION OF THE PHOTOGRAPHIC SOCIETY'S "STANDARD."

BY THOMAS R. DALLMEYER.

When the Waterhouse diaphragms were universally adopted by opticians as a necessary and most useful adjunct to photographic lenses, the apertures of the "set of stops" supplied with each were so arranged that the photographer who employed them (whether he understood the meaning of "intensity" or not) should have no difficulty in hitting upon the correct exposure with any particular stop, when the exact exposure with one was known. Generally speaking they were numbered 1, 2, 3, 4, etc., and so arranged that counting from the largest to next size smaller, the time of exposure would be about doubled; in my lenses intermediate stops are supplied that require only half as long again as the preceding larger stop. Nor, indeed, is the present system different, except in the notation or stamping the diaphragms as a guide to exposure.

The old system was deemed adequate when only one lens was employed, and when more, an ordinary operator knowing the ratio of aperture to focus or "intensity" of his various lenses, could, having determined the exposure for one, easily calculate the others. This, of course, remains so still, but the introduction of a "standard" facilitates the comparison. In the recent additions made to the pamphlet, "On the Choice and Use of Photographic Lenses," I have given the comparative exposures of all my view lenses.

That the Photographic Society's "standard" has facilitated comparative exposures is undoubted, but it appears to me that the arbitrary "standard" adopted, namely, intensity $\frac{1}{4}$, is an unhappy one and, moreover, is primarily unintelligible. As far as I understand, it is adopted as a kind of "mean" that will produce convenient numbers, neither too small with rapid exposures nor too great with long exposures; I can see no other object in it, but am unaware of the reasons that led to such a choice.

The determination of exposure generally (leaving out of the question differences in the number of reflecting surfaces, thickness, near objects, etc.), depends on the ratio of the controlling aperture to focus or "intensity." Should not then the "standard" adopted have some intelligible relation to "intensity?" I propose to adopt as a "standard" $\frac{1}{\sqrt{10}}$. The result is that the "standard" numbers become a factor of the squares of the denominators of the fraction expressing "intensity," and the system is a decimal one.

Thus:

Proposed New Standard $= \frac{1}{\sqrt{10}}$, and $\left(\frac{1}{\sqrt{10}}\right)^2 = \frac{1}{10}$. Divisor $= 10$

P. S. Standard $= \frac{1}{4}$, and $(\frac{1}{4})^2 = \frac{1}{16}$. Divisor $= 16$

For example:

		Relative Exposures.	Proposed New Standard.	P. S. Standard.
Intensity	$\frac{1}{1}$.	$1^2 = 1 \div$	$10 = .1$	.0625
"	$\frac{1}{2}$.	$2^2 = 4 \div$	$10 = .4$	.25
"	$\frac{1}{3}$.	$3^2 = 9 \div$	$10 = .9$	.5625
Standard Intensity	$\frac{1}{\sqrt{10}}$	$\left(\frac{1}{\sqrt{10}}\right)^2 = 10 \div$	$10 = 1.$	.625
"	$\frac{1}{4}$.	$4^2 = 16 \div$	$10 = 1.6$	1.
"	$\frac{1}{5}$.	$5^2 = 25 \div$	$10 = 2.5$	1.5625

And so on.

Or take, for example, a lens with its own set of diaphragms as at present in use, say a 12 x 10 rapid rectilinear, focus 16 inches:

Old Notation.	Diameter of Stop.	Intensity.	Square of Denominal.	Relative Rapidity.	Prop. New Standard.	P. S. Standard.
No. 0.	1.7	$\frac{1}{8}$	$8^2 =$	64	6.4	4
" X.	1.4	$\frac{1}{11}$	$11^2 =$	121	12.1	7.56
" 2.	1.2	$\frac{1}{13}$	$13^2 =$	169	16.9	10.56
" 3.	.85	$\frac{1}{19}$	$19^2 =$	361	36.1	22.56
" 4.	.6	$\frac{1}{26}$	$26^2 =$	676	67.6	42.25
" 5.	.4	$\frac{1}{40}$	$40^2 =$	160	1600	100

The objection, if any be found, appears trivial, in that the numbers are slightly greater than the P. S. system, and its advantages are evident.

I dare hope to receive the Photographic Society's support, as well as the co-operation of other opticians.

[We call the attention of our readers to the supplement to this issue of the BULLETIN, where we give a complete reprint of Mr. Dallmeyer's valuable tables. These are worth preserving, and we have printed in this form for that purpose. —EDS.]

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GERMAN PICTURES FOR CHICAGO.

As we go to press we receive a letter from Germany that contains encouraging news; they promise to do all they can for the Chicago exhibition.

GHOSTS.

To the Editors of the BULLETIN.

HAVING read in the BULLETIN about my brother photographer's trouble in regard to ghosts; also having had some experience with them myself, I thought that if by relating my experience it would help the brother out of his difficulty, I would gladly do so.

A year ago last fall an amateur called at my rooms and wished to borrow my view lens. He took it, made an exposure, and brought the negative to me and asked the cause of a circular spot in the center of the negative. I looked it over and told him not to try to take pictures against the sun. He said the sun was nearly behind him. I went with him and looked the camera over thoroughly, also the house which he was taking a picture of, and thought that I had discovered the cause, as the piazza was highly polished with shellac, that doubtless causing the trouble. We then made an exposure next day, when it was very cloudy and no chance for reflection, but still the ghost was there. I gave up looking for the cause as every effort failed.

During the winter following I was called out in the country to make some snow scenes. Made some exposures and found the old trouble—more ghosts. I almost gave up in despair, as I wanted the views extra nice. I looked my camera over once more thoroughly, and at last discovered the cause. I took the ground glass off, and by looking through the back part of the box toward the tube, discovered a faint circle of light around the outside of the lens. I got a small piece of cloth and crowded it around the lens, then made an exposure—no more ghosts. I have not been troubled with them from that day to this, and I have used my lens for almost all kinds of work. I think that if my brother will investigate carefully he will discover the cause. A BROTHER PHOTOGRAPHER.

OUR ILLUSTRATION.

SOME time ago Mr. W. H. Mapes, of Newburgh, sent us a print of a frame of pictures that he had exhibited at the State Agricultural Fair, and which appeared to us to be of more than ordinary merit. Through his kindness in supplying us with the negatives we are enabled to give our readers an example of this interesting mosaic as an illustration to this issue of the BULLETIN. Mr. Mapes writes that they were all made upon the Stanley plates, and quick exposures were caught with the Prosch Eclipse Shutter. They are artistically arranged and most of the pictures are pretty, and in the case of the animals exceedingly lifelike.

PATENTS AND PATENT SUITS.

To the Editors of the BULLETIN.

CONSIDERABLE publicity was lately given to a suit brought by the Eastman Dry Plate and Film Company against E. & H. T. Anthony & Co. upon a patent granted to the former for a machine used in making films, and we are charged with "fraud and conspiracy" in having obtained the invention "through a workman named Cossitt," whom, it was charged, we "hired away from the plaintiffs." We deemed it proper to keep silent as to these slanders while the matter was pending, and until a judicial investigation could be had, but now a word to our friends will not be out of place. The Eastman Company's motion for an injunction came up for hearing April 23d, in the United States Circuit Court, before Judge Shipman, and by him, after full argument on both sides, which was attended by the officers of the Eastman Company, the injunction asked for was denied on the spot, and the provisional injunction, which had been obtained *ex parte*, and without any notice to us, was immediately dissolved. It appeared from our proofs that we had not been guilty of any "fraud" or "conspiracy;" that we had not "hired away" Mr. Cossitt; that we had not constructed or operated any machine in infringement of the Eastman patent; and that the machine which we had commenced to build we voluntarily stopped upon learning of the Eastman patent, and long before any suit was brought against us. The Eastman party found out that it was easier to make charges of "fraud and conspiracy" than to substantiate them. Mr. B. F. Lee and Mr. George Selden appeared for the Eastman Company, and Mr. Edmund Wetmore and Mr. William A. Jenner represented E. & H. T. Anthony & Co.

The controversy was important, as touching our right to make by machinery Bromide Paper, for which we hold Letters Patent, dated May 3, 1881, and which we are now offering to the trade. Special attention of the public is called to this and to the suit commenced by us against the Eastman Dry Plate and Film Company upon this patent. Yours truly,

E. & H. T. Anthony & Co.

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

The Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A cash prize of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

AIR BRUSH PRIZES.

THE AIR BRUSH MANUFACTURING COMPANY will offer two prizes at the Convention of the Photographers' Association of America to be held in Chicago, August, 1887.

An air brush will be given for the best portrait in black and white, finished exclusively by it, and another will be given for the best water-color portrait finished exclusively by the air brush. Portraits may be of any size and upon any print.

The awards will be made during the Convention by three judges who shall be members of the P. A. of A., and who shall be chosen at the time of the Convention.

Each certificate of award will be accompanied by an order upon the Air Brush Company for one complete air brush.

W. H. WALMSLEY'S PRIZE.

W. H. WALMSLEY & Co., of Philadelphia, offer two prizes for competition at the Chicago Convention.

First Prize.—For best portrait, from cabinet to life-size, made with Beck's "Autograph" Lenses (not smaller than No. 6), one No. 7 "Autograph" Lens, value $100.

Second Prize.—For best picture, other than portrait, one No. 5 "Autograph" Lens, value $60.

PHOSPHORESCENT LIGHT IN DEVELOPING.

To the Editors of the BULLETIN.

HAVING read your interesting article "A Curious Phenomenon in Developing," I want to give my experience in the same matter. I noticed this phosphorescent light as early as 1884, but not seeing anything about it in the journal, I thought nothing further about it. I found it would occur more often in using the potash developer than with soda. I noted the light for the first time in the alum solution, and on taking the plate out of the bath, and washing it under the tap, I saw that it gave a brilliant light floating into the sink, and illuminating the whole of the lead box used for the sink. It is my impression that the light occurs more often in summer than in winter.

Respectfully yours, G. A. PANNEWITZ.

[We are glad to hear of our correspondent's experience and hope he will continue his observations on this interesting phenomenon. We believe there is some important fact to be learned about this remarkable production of phosphorescent light.—EDS.]

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

THE regular monthly meeting of the above Club took place on Monday evening, April 18th, at the rooms, 907 Filbert street.

President HAINES called the meeting to order at 8.30, and at once introduced Mr. XANTHUS SMITH, who read a paper entitled "Hints on Composition and Selection of Subject." [See next BULLETIN.]

Upon the conclusion of the paper the lights of the room were lowered and a number of slides projected upon the screen to illustrate the salient features of Mr. Smith's remarks.

The slides chosen for the purpose were copies of engravings selected from the works of Turner, Stanfield, Linton, Sir David Wilkie, Doré, and other eminent artists.

The subjects of Stanfield were selected principally to show the grand massing of light and shade in sky effects, light on dark and *vice versa*. It was not possible to imitate these pictures by means of photography, but they were of immense value as educators in lighting and imposing effect. Turner's "Ruins of Carthage" was of another order. Here was a picture with the important feature repeated, but subordinated, making the subject one of perfect harmony and splendid in treatment. Other examples of Turner such as the Téméraire, View of Tynemouth, and one of Dunstanborough Castle were all of immense benefit in composition, the management of light and shade, and the judicious introduction and placing of figures, boats, etc., as accessories to the story. The well known picture of "Sunday Morning," after Sir David Wilkie, was a rare treat. The breaking of the numerous straight lines of the picture by means of simple things of the household proved the possibility of accomplishing similar studies by the aid of the camera.

A number of slides were shown, the work of members of the club, and the weak and good points touched upon by the lecturer to the great benefit of all concerned. The rural scenes in Normandy taken by Mr. Alfred Clements, the groups by Mr. J. Bartlett, and the prize picture of Mr. F. G. Stuart ("The Midshipmite") were warmly praised by Mr. Smith, as being artistic productions of very high rank.

Upon motion a vote of thanks was unanimously accorded Mr. Smith for his kindness, after which the meeting adjourned.

ALFRED THOMPSON, *Secretary.*

THE BRIDGEPORT CAMERA CLUB.

A NUMBER of the leading amateur photographers in Bridgeport, Conn., met informally at the office of Mr. George H. Johnson, on Tuesday evening, April 19th, and discussed the matter of organizing a club. It was unanimously agreed that there was need of a good society and accordingly a preliminary organization was effected, Mr. George H. Johnson acting as Chairman and Mr. A. C. Campbell as Secretary *pro tem.* "The Bridgeport Camera Club" was decided upon for its title, and a special committee of three, consisting of Messrs. Campbell, Birdseye, and Dr. Godfrey, was nominated and appointed to draw up a Constitution and look up suitable permanent quarters. The meeting then adjourned till Tuesday, April 26th, when the committee, it is expected, will report progress. The club is to be open to both amateurs and professionals.

Since Bridgeport is a growing city, continually increasing the number and variety of its manufactures, it would not be surprising if the sons of some of its prominent manufacturers and inventors should not eventually develop talent, now latent, sufficient to greatly improve our present photographic appliances. The club has made an excellent beginning and will no doubt do considerable good for photography in this city.

Among those present to assist in the organization was Mr. F. C. Beach, lately the President of the New York Amateur Society.

At the second meeting of the Bridgeport Camera Club, the following officers were elected: Dr. C. C. GODFREY, *President;* GEORGE K. BIRDSEYE, *Vice-President;* A. C. CAMPBELL, *Secretary;* GEORGE H. JOHNSON, *Treasurer;* Dr. C. C. GODFREY, GEORGE H. BIRDSEYE, S. S. SANFORD, CHARLES ARMSTRONG AND W. H. LAMSON, *Executive Committee.*

The association will have permanent quarters with a well-equipped dark room, and will hold meetings on the second and fourth Tuesdays of each month. It starts with a membership of about fifteen and hope for increase at an early day. It means business and has come to stay.

A. C. CAMPBELL,
Secretary.

GERMAN PHOTOGRAPHIC SOCIETY OF NEW YORK.

THE annual meeting of the above Society was held on March 23d, at 62 East Fourth street, when the election of officers took place. The following gentlemen were chosen unanimously: A. Wildenberger, President; C. Rühler, Vice-President; A. Esselborn, Recording Secretary; G. Weinig, Corresponding Secretary; L. Schill, Financial Secretary; G. E. Pellnitz, Treasurer; L. Burkhardt and G. Bilgenroth, Archivars; Charles F. Kutscher, L. Nagel and J. Baumgaten, Trustees. After the election the members adjourned to a social meeting.

G. WEINIG,
Corresponding Secretary.

The German Photographic Society of New York, 62 East Fourth street, will receive correspondence from employers, as well as employees, for help or situations.

COLUMBIA COLLEGE AMATEUR PHOTOGRAPHIC SOCIETY.

PROFESSOR OGDEN N. ROOD addressed the members of the society, and invited friends, in his lecture-room at the College, on April 29th, on "Some Recent Advances in Photography."

He commenced by defining the position of the amateur photographer, and distinguished between the true and the false amateur; between those who expose the plate and then have it developed in the Bowery and printed in Centre street, and those who perform all the manipulations themselves, and learn experimentally, in consequence, much of chemistry and optics, besides artistic composition, light and shade, with not a little of human nature.

The Professor stated the general principles of groups, with hints for single portraits, showing many prints of his own, and of members of the society; and he insisted especially on the necessity of having the subject do something while being taken, to give animation and apparent motive to the picture.

The lecturer then explained several devices of manipulation of his own contrivance; a varnish of particular composition for stopping out on negatives; washed emery applied with a paper stump for reducing dense parts; a fine knife made from a needle for removing any objectionable parts of the negative; masks of paper shaded with crayon for printing negatives of unequal density; with many others of similar character, all illustrated by prints showing the effect of each.

He further presented various clever pieces of apparatus: an arrangement for washing negatives; one for determining proper inclination of printing frames in the sun; a very simple actinometer; and an excellent arrangement for a magnesium light, with which he had done some very effective work.

BOSTON CAMERA CLUB.

FIELD DAY.

OF the twelve members of the club who made up the Field Day party April 7th, eleven sent in their negatives. Printed labels had been prepared and the committee attached proper ones to each negative, besides matting all, so that those who were quick printing would leave a white margin. The prints were all made by Messrs. Allen & Rowell, and mounted on 11 x 14 drab colored cards, so that good points would show up to best advantage.

At a meeting of the club on April 14th, Messrs. E. F. Wilder, G. A. Cabot and John H. Thurston were chosen to act as judges. They began their work Saturday afternoon, April 30th, and finished on Monday, May 2d with the following results:

	Focus.	Exposure.	Development.	Negative.	Print.	Total Points.	Artistic Merit.
A	13	10	9	11	18	51	40
C	33	40	39	36	38	186	62
D	41	50	47	41	47	226	88
E	37	37	38	37	34	183	66
G	36	34	42	39	33	184	61
H	38	42	44	49	41	214	84
I	46	46	49	48	46	235	97
K	13	23	24	30	16	106	57
L	26	40	40	42	38	186	95
M	43	41	36	37	37	194	56
N	40	34	47	48	44	209	79

In justice to A, it should be stated that, owing to an accident, he was able to carry but six plates to the field. Each of the others made eleven exposures.

It appears that "I" is the best photographer, as well as showing the most artistic taste.

It is the intention of the committee to have the collection of prints substantially bound, containing all information in regard to the trip and its results, and kept in the rooms.

William G. Reed,
For Committee.

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THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Third Winter Lantern Exhibition, February 23, 1886.

The meeting was held in the rooms of the Society, 122 West Thirty-sixth street, and was called to order at 8.20 P.M. *President* Beach in the chair.

The *Secretary* read a synopsis of the minutes of the previous meeting, which was adopted.

The following communication was then read:

[Communication from F. P. Cembrano, Richmond, Eng.]

Richmond, Eng., February 8, 1887.

Mr. F. C. Beach,
President Society of Amateur Photographers of New York.

Dear Sir,—A short time ago I had occasion to visit the works of Morgan & Kidd, located not far from where I reside, who, as you know, do enlarging for the profession all over the kingdom and colonies to a great extent; the results that were shown me were simply magnificent. They have eight enlarging cameras going the whole day, and they use daylight reflected by a large mirror on to the negative. Their largest dish is certainly a good size, about six feet long!

For copying from paper prints they use an almost side light and thus avoid granularity. Theoretically they are wrong—practically their results are all that can be desired.

For getting printing density they often have recourse to the very rapid and repeated pouring off and on the developer on the plate or paper.

For enlargements they often develop locally by means of a tuft of cotton wool soaked in the developer.

Thanking you for your invitation to send an exhibit to the exhibition,

I remain,
Yours very truly,
F. P. Cembrano.

The *President* then passed around an interesting 6½ x 4¼ photograph recently received from John A. Frith, St. George, Bermuda, said to have been taken on February 8, 1887, at 11 P.M., by moonlight. No particulars as to the lens, exposure or development were sent, but it was a remarkably clear photograph, showing that the negative had good density. A slight blur near the edges of the picture indicated that a large stop must have been used.

The *Secretary* then announced the election of E. D. Fisher, M.D., as an Active Member; Jos. M. Ward and J. Howard Wainwright, Ph.D., as Associate Members.

The *President* stated that the programme for the evening would vary some from the usual course. The lantern exhibition would be held for a period of half an hour, then there would be a recess of five minutes, when a new exposing shutter would be exhibited, after which the exhibition would continue to its close.

The lights were turned down, and the exhibition of one hundred lantern slides contributed by the Photographic Section of the Cincinnati Society of Natural History commenced, the *President*, Mr. Frisbie and Mr. Rich working the lantern, and the *Secretary* announcing the subjects as they appeared on the screen.

During the recess Mr. Beach exhibited a very neatly made and substantially finished shutter exposer, the invention of Mr. A. D. Campbell, of Bridgeport, Conn., an amateur, who had gotten it up for his own use.

It was a hinged fly-open shutter, and by a simple but ingenious mechanism operated by a pneumatic bulb, it could be made to open instantaneously or slowly, at the pleasure of the operator.

The inventor claimed that it was merely a substitute for the cap of the lens, and enabled the operator to watch the subject and make the exposure at just the right moment. The model shown worked very smoothly, and was favorably commented upon by many members who examined it. At the close of the exhibition the meeting adjourned.

As is usual with the lantern exhibitions of the society, several ladies were present to enjoy the entertainment.

REGULAR MEETING, MARCH 8, 1887.

THE meeting was called to order shortly after 8 P.M., *President* BEACH in the chair.

The *Secretary* read a synopsis of the minutes of the previous meeting, which was adopted. He then read the following communications.

[Communication from J. W. Davis.]

MONTREAL, CAN., February 26, 1887.

F. C. BEACH, *President*.

DEAR SIR,—It may be of interest to some of the members of the New York Society to learn of the difficulties we are having in photographing the ice castle here. It is bothering others than amateurs. The difficulty is to obtain sufficient density in the negative to secure a print showing white ice with detail. All of the professional work which I have so far seen, represents the castle as though made of black ice. I have one negative out of seven which makes a print of the right color. One professional says it is necessary to under-expose and over-develop to produce the right effect, but it seems almost impossible to under-expose. Mr. Notman, Jr., tells me that with his exposures (forty this winter on this castle) he has not yet seen an under-timed one. I use a Ross rapid symmetrical lens of 11-inch focus for 6½ x 8½ plates, sensitometer test about 18 or 19, and a drop shutter working at its fastest speed, with a diaphragm in the lens the size of inclosed sketch (*f*-64) and yet I fail to obtain printing density every time. If you have never tried photographing an ice structure I would suggest that you try it by photographing some blocks of clear ice, which you can readily procure in your city. See if you can under-expose it.

Some very nice portraits have been made in our room, which is fitted with a window 10 x 5. By using quite a large reflector we get a very fair light.

Yours respect'y, J. W. DAVIS.
Secretary Montreal Camera Club.

[Communication from Edward F. Wilder.]

BOSTON, MASS., March 7, 1887.

F. C. BEACH, Esq., *President*.

DEAR SIR,—I should like to suggest the interchange of slides among the different clubs; would also be a favorable time for a personal exchange between individual members of contributing societies; and would say that I would be pleased to exchange duplicates of those I sent with the Boston Club's contribution. Would it not be feasible for any of your men to designate such as they would be willing to exchange, so that when the New York slides are shown before our clubs we could see what we were doing.

Our club is developing considerable enthusiasm on the lantern slide question.

Yours respectfully,
EDWARD F. WILDER,
Member of the Boston Camera Club.

NEW YORK, March 6, 1887.

MR. JOHN T. GRANGER,
Secretary New York Society of
Amateur Photographers,
122 West 36th street.

MY DEAR SIR,—I have a large collection of excellent photographs of people, places, and scenery of Central America; also a number of household utensils, garments, jewelry, weapons and idols of the Central American Indians; likewise a number of South American curios. I deem it possible that your society might be willing to make slides of some, or all of them; accept the photos in payment therefor, and, if desired, I would deliver before your society one or two lectures on Central America, for the benefit of your society. The Lee Literary Society, the St. Mark's Literary Society and others, will tell you of my capacity to interest people. Yours very truly,

FRED. C. VALENTINE,
Ex-Surgeon-General Army of Honduras.
Author of "Central American Women," etc.

The *President* stated that a test lantern exhibition would be given Friday evening, March 18th, and the first spring lantern exhibition would occur on March 23d, when one hundred and twenty-five slides contributed by the Boston Camera Club would be shown.

An improved Fairchild lantern, in which both gases are generated as fast as used, would be used, and would be operated by Mr. John J. Wilson. It was so compact that it could be readily folded up for packing in a light hand valise.

There has been added to the Library a new pamphlet entitled "The Application of Composite Photography to Handwriting and Especially to Signatures," by Persifor Frazer. This has been presented to the society by Dr. Janeway.

The *Secretary* read the names of newly elected members as follows: As Active Members: S. W. Bridgham, Mrs. Alice F. Williams, John S. Hoyt. Subscribing Member: Felix Reifschneider. Corresponding Members: James M. Codman, Brookline, Mass.; J. Nelson Borland, New London, Conn.; and Ernest F. Wurtele, Quebec, Canada.

Mr. BEACH—Before we commence the entertainment of the evening, Dr. Janeway has a few questions relative to the Question Box to dispose of.

Dr. JANEWAY—*Mr. President, Ladies and Gentlemen:* These questions are such that they require a categorical answer, and they therefore will not be discussed. The first question is evidently from a lady member, and is as follows:

"*Is there any process by which faded photographs can be restored? And if so, by what process?*"

The answer of the Committee is, Yes. There are one or two processes, but the one which I find most successful is a process described in the July number, 1884, of the *Photographic Times*, Scovill Mfg. Co., publishers. A copy of the photograph is first taken, for the reason that sometimes these faded photographs cannot be restored. From this negative a well-exposed positive is taken and developed pretty thoroughly in order to get all the details and density possible. The photograph is placed in warm water, and after a while it separates from the mount. It is then laid in a flat dish just covered with warm water, and the starch on the back gently rubbed off. After the starch is entirely rubbed off it is rinsed in fresh water, and then put in a one-grain solution of bichloride of mercury. You will be astonished at how soon the bleaching process will take place. The yellow, almost a brown yellow, becomes quite white, and the dark portions of the picture will soon be a darker color. It is then washed, put away to dry, and then mounted.

Another member sends some questions which require the same answer.

Question 1.—"*Why does the color of the precipitate of gold on a silver albumen print vary according to the toning bath; sodium acetate, sodium borate, sodium carbonate each giving a different tint?*"

To this question I will say no one knows positively what the chemical action in the toning bath is, See page 107 *British Journal* Almanac, 1886, "Theory of Toning."

Question 2.—"*Why does the oxalate developer give a black color, and the pyro developer a greenish-gray color to the negative?*"

The plates of no two makers require the same amount of pyro. Therefore it is necessary to test them for the proper amount required by each, to obtain uniformly good results. With proper management as perfect a black may be obtained with pyro as with iron.

Question 3.—"*Where is to be found a record of the experiments going to prove the oft-stated opinion that the precipitate on a negative is metallic silver?*"

See Dr. J. M. Eder's Modern Dry Plates edited by H. Baden Pritchard, page 30, etc.

Question 4.—"*Where can one who believes that the success of a picture depends on the power to please the mind, find a course of instruction in art composition either in a school or in a book?*"

Professor Spaulding says "I should commend the little book written by H. P. Robinson, 'Picture Making by Photography.'" Instruction could be obtained at the Art School of the Metropolitan Museum, 214 East 34th street, John Ward Simpson, Superintendent. And I would say also, read "Pictorial Effect in Photography," H. P. Robinson, also "Wilson's Photographic Lessons A, K, L, and T." Lesson "A" is worth more than the cost of the whole book.

Question 5.—"*Is there truth in the statement that silver chloride reproduces to a small degree the colors of the spectrum?*"

The statement is found on page 172 of "A History and Hand-book of Photography," by Tissandier, edited by Thompson." Yes. Consult Dr. Vogel's "Progress in Photography," page 78, etc.

The *President*—I am happy to say that we have with us this evening Mr. George M. Hopkins, who has kindly consented to show some experiments on the refraction and reflection of light, and also, after the preliminary experiments, some polariscopic effects of light with the micro-polariscope.

The lights were then lowered, and Mr. Hopkins proceeded with his experiments.

A special screen was hung in front of the folding doors upon which projections were thrown from Mr. Hopkins' special lantern, located near the center of the room. The society's lantern was placed on a raised platform at the corner of the room adjacent to the folding doors, for use in showing the refraction of light.

(*To be continued.*)

Found in the Editor's Box.

A CLERGYMAN in Auburn, N. Y., enforced his text with the following bit of artistic genre:

"I spend an hour or two looking over the gallery, and on retiring I come again to the room where I saw the man. He is yet there, sitting before that picture. I cannot forbear merriment. My curiosity is excited.

"I think I will try to see what he has to say for himself—he must be a fanatic or a crank. I tap him on the shoulder and say, 'My dear sir, can you tell me what you are staying so long before this daub for?'

"He doesn't notice me.

"I repeat the remark, but he is yet dumb.

"Then I raise my voice a little, and change my form of speech, and finally he looks up. He hesitates a moment, then says:

"'Except ye have the artist's soul ye cannot see the artist's work'—only that and nothing more.

"But I say:

"'I guess I'm as good as you are.'

"No doubt,' says the artist, 'but you haven't the eye to see pictures.'

"'But ain't my clothes as good as yours—just look at my new trousers; they're really better style than yours.'

"'Very true,' says the artist, 'but you can't see pictures with your pants.'"—*N. Y. Times.*

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. F. L. writes: Will the BULLETIN please tell me whether the illumination of the object, the lens, and the stop being the same, and the time proportioned to the rapidity of the plate, a very quick plate should be developed in the same manner as a slow one.

A.—A great deal will depend upon the make of the plate, especially the character of the gelatine used; also upon the temperature of the developer. But with a quick plate it is always best to use a weak developer, that is, one diluted with water, to begin the development, and if necessary increase the strength by adding first alkali and then pyro until the desired strength in the picture is attained. Plates made with hard gelatine, to prevent frilling, will develop slowly, even if the emulsion is quick, that is, receives an impression from a very rapid exposure, as a certain amount of soaking is necessary for the developer to penetrate the film.

Q.—W. S. G. writes: I admire the tone of the photogravure in the BULLETIN for April 23d. Will you please state, through the columns of the journal, if it is possible to obtain the same or a similar tone on bromide paper, and if so, by what means?

A.—Our correspondent must understand that the tone (color) of the photogravure is obtained by using colored ink as in an engraving. But a tone of a similar character can be obtained on bromide paper by the use of uranium salts and red prussiate of potassium; and fortunately Dr. Vogel gives a method of working the process in his "Letter from Germany" in this issue of the BULLETIN. We refer W. S. G. to Dr. Vogel's letter for the latest information on the subject.

Q.—J. G. A. incloses a reddish print and writes: Will you please give me some information, through the BULLETIN, about the cause of the brownish-red color of the print I send you. This is the worst one I have ever made, while all are more or less of the same shade. The print was made on ready sensitized paper, following the directions that came in the box?

A.—The trouble here appears to be lack ot fuming in the first place, secondly, too faint printing, and thirdly, not enough toning. By lack of fuming we mean either too short a time (less than half an hour) or the ammonia was too weak. The printing should be carried until the picture looks spoilt almost, only the high lights being seen, Instead of washing the prints in citrate of soda as in the directions, try water containing half a dram of ammonia to the pint for first soaking and then rinse once in clean water before putting in the toning bath. Perhaps longer toning will cure the trouble, but by the use of ammonia in the wash water before toning, the prints will not have such a red color before toning.

Q.—O. G. writes: In the BULLETIN I meet with a question that R. G. B. makes, saying: "Can a 6½ x 8½ camera be used for making 5 x 8 stereoscopic views?" which is answered by: "Yes. Use a partition in the camera and a 5 x 8 kit in your plate holder." As my Novel 6½ x 8½ camera is fitted for putting in a partition, and my plate holders are provided with 4 x 5 and 5 x 8 kits, I tried this manner of procuring stereoscopic views, but without any result. Is it not omitted that two lenses are required for getting a stereoscopic view? Or what other precautions are to be observed?

A.—To obtain stereoscopic views it is of course necessary to use two lenses, one for each of the pictures that are mounted upon the cards.

Q.—Hypo writes: Will you kindly answer the following questions: 1. What is the cause of the mottled or honey-combed appearance? 2. Is it best to rock the plate during development, and what effect does it produce? 3. Why do some authorities recommend the plate to be rocked when it is placed in the fixing bath? 4. What is meant by a 10 grain or 10 per cent. solution of any chemical? 5. How long is it necessary to rinse a plate after development before immersion in the alum bath?

A.—We do not understand first question. What motlled appearance, and when? 2. It is best to rock the plate; it facilitates development by bringing new solution into contact with the plate and equalizes the action on the image. 3. For the same reasons as No. 2, it facilitates fixing. 4. A 10-grain solution is 10 grains of chemical in the fluid ounce; a 10 per cent. solution is 10 parts of the chemical in 100 parts of the solution (say 10 ounces in 100 fluid ounces). 5. Wash for about one minute, rubbing the fingers lightly all over the film.

Views Caught with the Drop Shutter.

Mr. B. H. L. Dabbs, of Pittsburgh, and his wife, gave us a call lately, during his trip to see his friends in New York and vicinity. We expect to see some of his good work at the Chicago Exhibition in August next.

Wilson, Hood & Co., of Philadelphia, send us a very neat little price list of amatuer photographic supplies. It contains everything that the amateur will need, and is of a very convenient size (about 3 x 5 inches), neatly printed and well illustrated.

The Herf & Frerichs' Chemical Co., have been incorporated at St. Louis, Mo., to manufacture pharmaceutical, photographic and technical chemicals,

Mr. E. K. Hough has returned from the South and is again at his home in Fredonia, N. Y. He has sold his studio at Winston, N.C.

Walzl's "Photographer's Friend," published in commemoration of his twenty-fifth anniversary in business, lies on our table. It is full of useful information about apparatus, chemicals and the photographic goods kept by Mr. Walzl, and contains a special list of bargains.

The Prosch Manufacturing Company have removed from 100 Walker street to 389 Broome street, New York.

I. Paxson has removed from 65 East 9th street to 63 East 9th street, New York.

W. F. Ashe, the well-known background manufacturer, has removed from 68 West 4th street to 76 East 9th street, New York.

A. D. Fisk, the photographic supply dealer, has removed from 26 Beekman street to 17 Murray street, New York.

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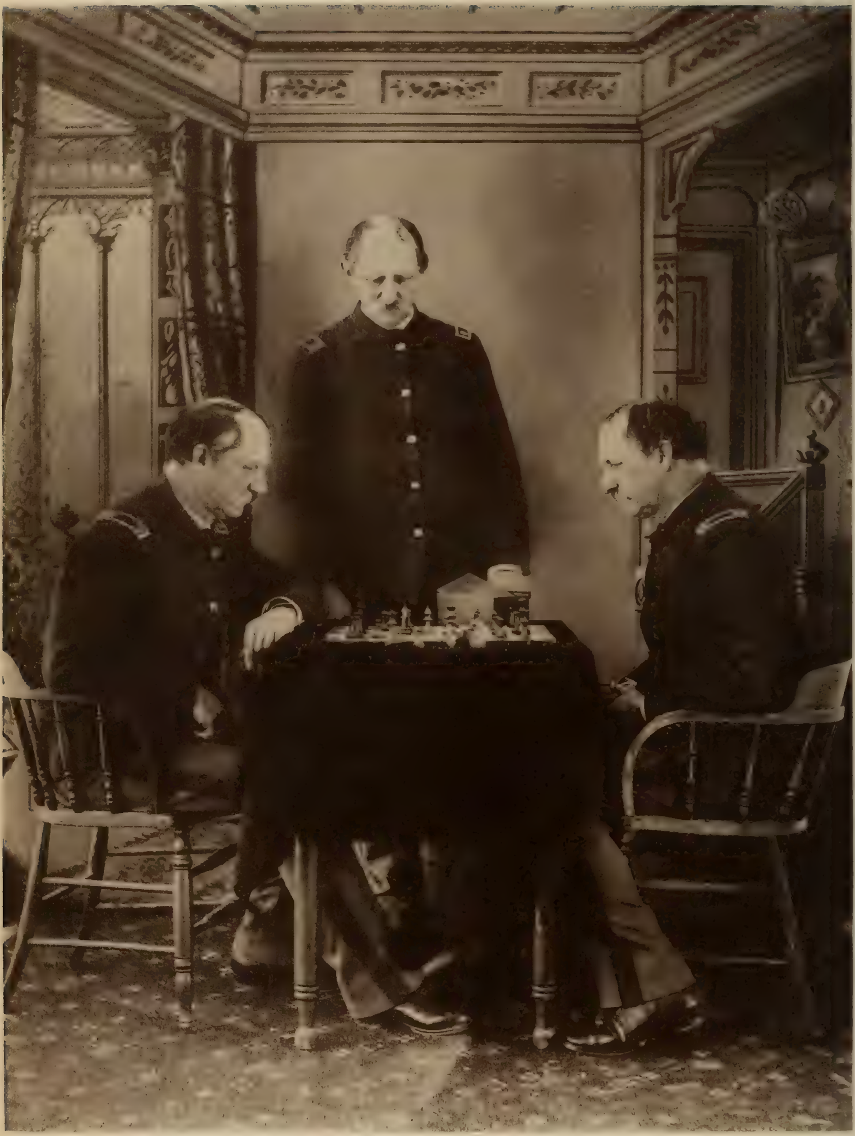
Evening Post Job Print, N. Y.



Col. A. C. M. Pennington, U. S. A.,

PLAYING CHESS WITH HIMSELF, AND LOOKING ON AT THE GAME.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MAY 28, 1887. Vol. XVIII.—No. 10.

DEVELOPING WITH HYDROSULPHITE.

We have constantly to record the advent of some new developer, which, upon examination, turns out to be a modification of either the ferrous oxalate or alkaline pyrogallol mixtures that are as old as dry plate photography. These modifications of developers are generally in the direction of complication without any compensating advantage in the use of the developer itself. With the ferrous oxalate mixture there are few chances for additions or modifications and it has suffered least in consequence; but with alkaline pyrogallol, the various changes that have been rung upon the old alkaline formula would take a large volume to record.

At the present time we think we can call the attention of our readers to a real advance in developers, that is, in the use of a new modification of a little known developer which has a powerful action, we mean hydrosulphurous acid. More correctly this should be called hyposulphurous acid, but to prevent confusion with the ordinary hyposulphurous (thiosulphuric) acid, the compound that gives us our ordinary hyposulphite of soda, we shall use the old name hydrosulphurous to avoid a misunderstanding.

As long ago as 1789, Berthollet, a French chemist, noted the fact that the metal iron dissolves in sulphurous acid solutions without evolution of gas; and later Fourcroy and Vauquelin found that zinc and tin acted in like manner. But it was reserved for Schutzenberger to investigate these actions and discover the formation of hydrosulphurous acid. The action that gives rise to the development of this low sulphur acid is very simple, and consists in the deoxidation of ordinary sulphurous acid by means of hydrogen, thus:

$$H_2SO_3+H_2=H_2SO_3+H_2O$$

By the method indicated a deep yellow colored liquid is obtained which is a most powerful reducing agent. It bleaches organic coloring matters, and precipitates both silver and mercury from their soluble salts.

The great drawback to this powerful reducing agent is its instability; it very rapidly returns to sulphurous acid again. But quite recently two French experimenters have suggested a method of using it that is worth some study and practical application. It is well known that instead of using a solution of sulphurous acid, a solution of bisulphite of sodium may be taken and the same reactions with zinc will result and sodium hydrosulphite is formed. The French experi-

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mentalists that we mention above, Auguste and Louis Lumière, plunge the plate that has been exposed into a solution of sulphurous acid, and at the same time add a large quantity of metallic zinc. But, unfortunately, the inhaling of the sulphurous oxide gas, the heating of the liquid, and the production of a veil of silver sulphide, due to the separation of free sulphur, are obstacles to the practical use of this method of development. "It is nevertheless true," they continue, "that the results we have been able to obtain surpass those furnished by known developers and are an incontestable proof of the powerful energy of this new agent of reduction." They further suggest that alkaline hydrosulphites possess analogous properties, from a photographic point of view, to those of hydrosulphurous acid, although to a less degree. Now it appears to us that this is the line of research that should be followed. As we note above, it is not necessary to use sulphurous acid solution, but an alkaline bisulphite. Furthermore, the same reaction that takes place with zinc can be obtained by the use of a galvanic current. Why therefore should we not develop an image on an exposed plate by placing it in a bath of bisulphite of sodium into which a current from a galvanic battery is passing, the plate being placed near the negative pole where the hydrogen is being formed. By regulating the force of the current from the battery, the energy of the developing action could be controlled and the heating of the liquid and the formation of the veil of sulphide of silver be entirely avoided. Those of our readers who are the owners of galvanic batteries can readily try our suggestion, and we shall be pleased to hear of the results, good, bad or indifferent, that they may obtain. We believe this is a new and fruitful field for photographic experiment.

EDITORIAL NOTES.

An interesting paper has just been published in the *Journal of the London Chemical Society* on the much disputed question of the existence of suboxide of silver. Dr. G. H. Bailey and Mr. G. J. Fowler, of Owen's College, Manchester, have very carefully repeated the experiments of Wöhler on the action of hydrogen on silver citrate, and those of Faraday on the compound formed from ammoniacal solution of silver oxide; and they have come to the conclusion that the latter compound is "a modified form of oxide of silver," and say further: "We have thus in the course of our own experiments been unable to obtain any evidence of the formation of an argentous citrate in the manner described by Wöhler, or of the formation of a suboxide of silver." These results are in confirmation of those obtained by Professor Newbury and published in the BULLETIN some time ago.

"FIRST ANNUAL REPORT of the Photographic Study of Stellar Spectra, conducted at Harvard Observatory" is the first published account that has been issued by Professor Pickering of the work done with the aid of the Draper Memorial Fund. The wonderful results already obtained were achieved by the aid of the 11-inch photographic telescope of the late Dr. Draper, and Mrs. Draper will now send the 28-inch reflector and 15-inch mirror which were used by Dr. Draper to photograph the moon. Furthermore, Mrs. Draper has also provided for the recording and computation of the results obtained at the Observatory, and their publication. This generous care on the part of Mrs. Draper will raise a monument to the memory of her illustrious husband which will have far more value than a mausoleum of brick or stone.

Romyn Hitchcock, the well-known microscopist, writing from Osaka, Japan, gives the result of his experience in comparing the pyrogallol and oxalate developers, and he favors the pyrogallol for the following reasons; 1. It gives softer negatives with short exposures. With ferrous oxalate, even when used very weak, a plate slightly under-exposed will give very strong and dense high lights before the shadows are well brought up, especially if there are strong contrasts in the subject. The only means of controlling this action is by making the developer weak in iron. Development then goes on very slowly, and is a tedious operation. With pyro, on the other hand, the details in the shadows may be quickly brought out by adding alkali, while keeping the developer weak in pyro prevents undue increase in the density of the high lights. 2. It is a more rapid developer. 3. It is decidedly more convenient to carry about when one is traveling. He also recommends a saturated solution of alum, acidified with oxalic acid, with an addition of ferrous sulphate, as a bath to remove pyro stains. Dry pyrogallol is preferred to the compressed tablets; and sulphite of soda made by saturating carbonate of soda with sulphurous acid, instead of the ordinary sulphite. The latter is practically bisulphite of soda.

An amateur photographic club has recently been formed at Vienna, and a copy of the organ of the club, the *Photographische Rundschau*, is before us. The journal is well edited, nicely printed, and tastefully bound in a paper cover. The literary matter is from some of the best workers in Austria, and the new paper will doubtless take a high stand among German photographic periodicals. The new amateur club is under the presidency of Herr Carl Srna, and contains many members well known in the best photographic work of Austria and Germany.

Colonel Henry E. Lasar, the United States Consul at the Falkland Islands, writes that there is great need of a first-class photographer there, and believes that a good artist would gain a competence in a very few years. Here is a chance for a good practical man that does not mind traveling and the inconvenience of living somewhat out of civilized life for a few years. The Falkland Islands are in the South Atlantic Ocean, about three hundred miles northeast of Terra del Fuego, and belong to the British Government. The area is 6,500 square miles.

The Argents, an old amateur photographic club of Washington, D. C., has been revived, with an increased membership and every prospect of renewed activity. Composed of some of the most prominent amateur photographers engaged in Government work, military, naval, and scientific, it promises to hold an unique position among amateur societies. Its officers are: *President*, T. W. Smillie, Smithsonian Institution; *Secretary and Treasurer*, Edgar Richards, Department of Agriculture. The club has already begun active work in photography, and we give a report of their first field day on another page. They have our hearty good wishes for their success.

THE FIRST ANNUAL EXHIBITION OF PHOTOGRAPHS.

Third Notice.

(*Continued.*)

George Bullock, of Cincinnati, had a large number of very fine pictures, that we are sorry we have not space to note more carefully. They were all excellent photographs and artistic pictures; the "Ford on the Miama River, Ohio," being the gem of the collection.

E. M. Franklin, of Flushing, N. Y., showed a number of excellent photographs, principally views around Flushing, on the Long Island shores, and in Maine. All were well caught. The "Mossuam River above the Falls, Maine," appeared to us the best picture.

H. M. Grisdale, of New York, had a large collection of handsome pictures, the best of which was a group marked *b* 287, an excellent photograph.

James F. Cowee of Troy, N. Y., who made the presentation print of the New York Society entitled "Surf," had a nice collection of views, and a couple of excellent photo-micrographs. Mr. Cowee excels in his pictures "After the Storm" and "An Adirondack Road."

Ralph McNiel as usual had a handsome collection of pictures that showed a more than ordinary skill in photographic methods. We must congratulate Mr. McNiel on his good work, and the neatness and finish with which it is always done. As a younger member of the New York Society he is a good example for some of the older ones to imitate both in work and enthusiasm.

W. M. Frisbie had a set of choice views, as well as some excellent transparencies and lantern slides. In each case the photographic work was of a high order.

Miss Mary E. Butterick, of Brooklyn, showed several excellent bromide prints, the "Group of Cattle," and "The Spinning Wheel" being the best.

F. C. Beach, of the New York Society, had a number of good photographs, the interiors in our judgment being the best, and very good.

Oscar Pach, the well-known New York photographer, had a number of examples of his fine work. Interiors, groups, animals, electric light pictures, etc., comment upon which is needless, all being work that results from fine taste and the highest photographic skill.

George G. Rockwood, also well-known as a skillful and artistic New York photographer, exhibited a couple of his fine portraits. In this case also we need not say that the work was of the highest order.

An interesting exhibit was that of Alexander Fekète, of Grosswarden, Hungary. This consisted of ten portrait studies that were exceedingly fine. The head and bust of a man in Hungarian costume was particularly fine; but there was not a poor feature about the whole exhibit. It appears to us that this deserved a diploma.

L. P. Atkinson, of Brooklyn, had a number of bromide prints that were very good, the colored "Bridge and Lake, Central Park," being excellently done.

Among the lantern slides we noted the good work of Mr. Brush, Mr. John G. Bullock, F. P. Cembrano, of England, and W. H. Walmsley, who had an exceedingly fine set of slides of microscopic objects. Messrs. Brush and Frisbie also exhibited some excellent transparencies.

We must now close our hurried review of this eminently successful exhibition. In the wilderness of fine pictures which we saw it was impossible to form a just idea of the work of each exhibitor. That we have not mentioned some is not because we did not appreciate their work, but time and space compel us to leave them unnoticed. When we say that there was scarcely a poor picture in the exhibition, our neglected friends will remember that they were in goodly company, and the fact that they had pictures on the walls is an assurance of their good quality.

One word to the management before we close. We are astonished at the number of prints marked "Not by Exhibitor." Cannot some effort be made to induce amateurs to make more of their own prints, at least for exhibitions of this character. And in the judgment of the merits of the pictures, the amount of work done by the exhibitor himself should always count in his favor. There is too much credit given to pictures the negatives only of which were made by the exhibitor. Many a negative would amount to very little if a good print is not made of it.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(Continued.)

Carbon Tissue Paper.—Though it is not very difficult to prepare this paper, as there are so many and reliable manufacturers who produce it in excellent quality, any desirable shade, and at not too high prices, it will be better to take advantage of their products, and save the carbon printer many an inconvenience and failure. I therefore abstain from giving a description how to prepare it, which would moreover lead to a somewhat lengthy discourse. There are however some few items which should always be borne in mind: 1st. The fresher the paper the better it will work. 2d. Always preserve the paper against dampness and emanations from kitchen, stable or privies; it is almost absolutely necessary to keep it in tin tubes or boxes, which should be as air-tight as possible. 3d. The cutting of the paper ought to be done with care, and the fingers should not touch the gelatine side, for any such touching would leave a mark and sometimes show in the picture. During hot weather linen thread gloves should be worn for this manipulation. The operation is often, especially during hot and dry weather, a somewhat tiresome one, since the paper becomes so brittle that it is scarcely manageable. It is therefore good to place it for a night in a cellar or room where some damp clothes are hung up, unroll, but not cut it until sufficiently softened. After cutting, the pieces should be kept under a weight or in a printing frame and with the carbon sides face to face.*

Sensitizing the Paper.—The solution should be prepared as follows:

Bichromate of potash (finely pulverized)	3 ounces.
Carbonate of ammonia	70 grains.
Water	100 ounces.

and after complete solution it should be filtered repeatedly through flannel. Never omit the carbonate of ammonia, as it much facilitates development. The solution must be used at a temperature of 58 degrees and if still cooler it will be better. It should stand at least 1½ inches in the tray, and care must be taken that the temperature *does not rise during the sensitizing.* Having dusted a piece of carbon paper on both sides immerse it in the solution, carbon side up, and for *exactly two minutes*, rocking the tray all the time, being careful that the paper remains completely covered. Any air-bells that appear must be removed by the duster. Withdraw the paper and *immediately* reimmerse in the solution, but this time *only for one minute* and carbon side down. Pass the duster over it in all directions, that no air-bells remain adhering to it, which sometimes produce black spots in the lighter parts of the picture.† Having placed a stout glass plate, somewhat larger than the sheet sensitized, on the table, take the sheet, holding it by two opposite corners, and allow the solution to run off; and as soon as drops form, lay it, carbon side down, upon the glass plate and cover it with the rubber-cloth, glossy side up. Now take the squeegee, and by employing at first a gentle pressure squeegee it in all directions and always from the center to the edges. The rubber-cloth is now withdrawn, and by means of one or two wood clips the paper is hung up to dry, either on some wires fitted up for this purpose in the drying room or placed in the drying box. Serve all the sheets to be sensitized in the same way. The squeegeeing of the paper may be omitted if desired, but *in hot weather it must be done.* The drying is a very important item, for the time which is occupied by it has a material influence upon its after behavior; if dried too quickly the paper will be found much too brittle, will print slow, and be deficient in half tones; if too long in drying it will most likely become insoluble and useless. The right time is from six to ten hours. The sensitizing can be done in subdued, daylight or, better still, in the evening, using a sperm candle; but neither kerosene or gaslight. Carbon paper when wet is not affected by light, but once *sensitized* and dry it is from *three* to *five* times more so than albumen silver paper. Proper drying imparts three qualities to the paper: 1st. Vigorous prints, clear whites or high lights, and well pronounced shadows; 2d. Easy adherence to the paper, glass, or other transfer medium; 3d. Easy and short development. Some authors have recommended to sensitize a couple of sheets at the same time, but I have found that this is not to be advocated, as there is no secure way to avoid the air-bells, which, if many sheets were sensitized together, would escape the attention of the worker, but would show when developing and not easily be removed. It is evident that the sensitizing solution, after having used it for a number of sheets, gets weaker, and it is therefore prudent to take a fresh bath after a certain number of sheets, say ten to fifteen, have been immersed. As the bichromate of potash is not an expensive chemical, there should not be a false economy with the bath, and after use the solutions should be thrown into the sink.

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* Single and double transfer paper, also flexible support paper will be described later on, when speaking of their employment for their respective uses.

† The paper first rolls up, but later on flattens out, and this is the right moment to withdraw it from the bath.

Regarding the management of the drying room and the drying box, I will here give some hints. The drying room should be as free from dust as possible, and be guarded against any white light, and have a good air supply. The drying box also must be dry, be well cleaned, and, before putting in the paper, the chloride of lime box should be filled about a quarter inch high and the air current established. Should there be much dampness in the air it will be found convenient to employ chloride of calcium, of which a sufficient quantity may be introduced *ad hoc*, and placed in the drying box.* It is good also to remove any vessels containing water or solutions, for their presence in the room would contribute to lengthen the drying of the paper.

Frequently the paper after a short, but good, drying becomes rather brittle and horny; in order to avoid this the sensitizing bath may be made up as follows:

Bichromate of potash	3 ounces.
Carbonate of ammonia	70 grains.
Water	100 ounces.

and for each quart of the solution from one-fourth to one-half dram of glycerine, but *never* more. When working in hot weather it will be found advantageous to add to the preceding formula from 90 to 100 grains of salicylic acid, and it will be found that the reticulation will be avoided.

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*From time to time, and especially when the air is humid, some heated bricks should be placed in the drying box, of course before any paper is hung up to dry.

Having sensitized in the evening, the paper will be found perfectly dry in the morning, provided that everything was all right, and it may now either be exposed to light under the negative, or placed in the preserving or magazine box. Of course these operations must be performed in non-actinic light. Paper which has been sensitized without the addition of salicylic acid cannot be kept longer than from three to five days, but those with salicylic acid will keep good, if preserved against the action of the light and air, for as long as ten to fifteen days. It is good to keep the sensitized papers in a light and air-tight box and under pressure.

(*To be continued.*)

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

JAMES MARTIN.

1860. "The Photographic Art: Its Theory and Practice; including its Chemistry and Optics. Originally compiled by M. Sparling. Revised and corrected to the present date by James Martin." R. Griffin & Co., London and Glasgow. 2s. 6d.

This volume forms a part of "Orr's Circle of the Sciences."

HENRY MATHESON, "Principal Operator for eight years in the Photographic Department, Crystal Palace, Sydenham."

1863. "Practical Advice to Amateur Photographers; or, the Direct Negative Process *versus* Strengthening Positives." Pamphlet. 12mo. 36 pp. Illustrated. James How, Foster Lane. 1s.

JOHN MAWSON.

1856. "Photographic Formulæ relative to the Collodion, Calotype, and other Processes." J. Mawson, Newcastle-on-Tyne. 6d.

ELIZA METEYARD.

1865. "Life of Josiah Wedgwood." 2 vols. 8vo. Hurst & Blackett. 42s.

Vol. II contains a brief notice of Thomas Wedgwood, an early experimenter in photography.

1871. "A Group of Englishmen (1795–1815), being records of the younger Wedgwoods and their Friends; embracing the History of the Discovery of Photography, and a Fac-simile of the First Photograph." 8vo. pp. xxii and 416. Frontispiece and one plate. Longmans. 16s.

Thomas Wedgwood, fourth son of the great potter, was possessed of great mental ability, but unfortunately enjoyed very bad health. During the last quarter of the eighteenth century he worked hard at various problems in chemistry and light, and succeeded in taking copies of paintings on glass, and of many flat objects which were partly opaque and partly transparent, by means of paper coated with a solution of nitrate of silver. He was unable, however, to find any means of fixing these impressions. After his death some account of his work in this direction was drawn up by Sir Humphrey Davy and published in the *Journal of the Royal Institution* for 1802.

DR. D. VAN MONCKHOVEN, born at Ghent, 1834, died 1882, was a thoroughly good "all-round" man of science. He wrote largely on photography, while among his practical contributions to the "light science" were a solar apparatus for enlarging, the manufacture of carbon tissue and gelatine dry plates on a large scale, improvements in the methods of emulsification, etc.

1863. "A Popular Treatise on Photography; also a description of and remarks on the Stereoscope and Photographic Optics." Translated from the French by W. H. Thornthwaite. 12mo. 137 pp. Illustrated. Weale's Series, Vol. 79**. Virtue Brothers, London. 1s. 6d.

This book is a free translation of the author's "Traite Populaire de Photographie sur Collodion," published in 1862. A second (English) edition appeared in 1867.

1868. "Photographic Optics; including the description of Lenses and Enlarging Apparatus." Crown 8vo. 259 pp. 5 folding plates and 87 woodcuts. R. Hardwicke, 192 Piccadilly. 7s. 6d.

This is a translation from the French. The title-page bears the date 1867, but we believe it was actually published during the first week of the following year.

JAMES MUDD was an accomplished landscape photographer, who successfully practiced the process with which his book deals.

1866. "The Collodio-Albumen Process; Hints on Composition; and other Papers." 12mo. 78 pp. T. Piper, 15 Gough square, London. 2s. 6d.

A new edition appeared in 1868. Cloth, 2s. 6d.; paper covers, 1s.

Among the "other papers" are certain humorous ones, as "The Gin-and-water Process," "The Photographer's Dream," "The Unfortunate Photographer," etc.

The collodio-albumen was a dry plate process in which the plate was first coated with collodion and then with albumen; it was sensitized after each coating and finally dried. Such plates were slow, requiring ten times the exposure of a wet plate.

DR. S. MUSPRATT.

1860. "Chemistry, Theoretical, Practical, and Analytical; as applied and relating to the Arts and Manufactures. 2 vols. Royal 8vo. W. Mackenzie, Glasgow. 67s.

In this work the articles are arranged alphabetically, photography coming in Vol. II, pp. 689–716. The editor states that "Mr. Sutton, of Jersey, kindly supplied some valuable matter for this monograph" on photography.

DR. H. NAPIAS, Medical Adviser to the French Photographic Benevolent Society.

1874. "Sanitary Hints to Photographers." Piper & Carter. 2d.

This pamphlet includes the valuable papers originally contributed by Dr. Napias to the *Moniteur de la Photographie*, and which were translated for and appeared in the *Photographic News*.

JAMES NICHOLLS, "Practical Photographer."

1860. "Microscopic Photography: its Art and Mystery. The Principles of the Art Disclosed, and its Practice Clearly Explained." 12mo. 30 pp. 4 woodcuts. F. J. Cox, optician, 22 Skinner street. 1s.

This is the only separate book, or rather pamphlet, on micro-photography which I have been able to trace. The author instructs us "how to obtain negatives of microscopic proportions." In the preface he adds, "should micro-photography ever be employed, as has been suggested, in the transmission of dispatches, the thin glass disk can be cemented down upon others of greater thickness and thus safely be made to form the molds of even waistcoat buttons; or simply varnished, like a sixpenny portrait, be let six deep into the jeweled bracelets of patriotic mademoiselles."

JOACHIM OTTÉ, F.G.S.

1858. "Landscape Photography; or, a Complete and Easy Description of the Manipulations and Apparatus Necessary for the Production of Landscape Pictures, Geological Sections, etc., by the Calotype, Wet Collodion, Collodio-albumen, Gelatine, and Wax-paper Processes." 12mo. 76 pp. Frontispiece. R. Hardwicke, Piccadilly. Cloth, gilt edges. 2s. 6d.

On the title-page Mr. Otté is described as the author of "A Short Cut to Photography," a book—if book it was—that I have not been able to trace. The gelatine process mentioned in the title, was a method employed by Dr. Hill Norris to obtain collodion dry plates. The plates were collodionized, sensitized, washed with distilled water, and then coated with gelatine and dried. Such plates remained sensitive for a long period, and after exposure they could be developed at leisure.

JOHN HENRY PARKER, C. B., was a distinguished antiquary, who employed photography largely to secure a record of the work done under his direction in Rome. His book, which is only what its full title states it to be, a Catalogue of Historical Photographs, is quoted in the English Catalogue as "Historical Photography," which implies a very different thing.

1879. "Historical Photographs: a Catalogue of 3,300 Photographs of Antiquities in Rome and Italy. With Explanatory Prefaces to each subject, the dates, and a General Index." 8vo. 485 pp. Parker & Co., 6 Southampton street. 10s. 6d. (*To be continued.*)

THE IMPOSSIBLE SHE.

BY ADELAIDE SKEEL.

(*Continued.*)

IT was Class-day at St. Matthew's, and a snow-fall of white, sweet-scented apple blossoms filled the air. Again Peter Van Wickle was storm-stayed, but this time there were no amateur photographers buzzing about him; instead, four hundred girls standing, with eight hundred feet, more or less reluctant where brook and river meet. It was June. It was noon. Some people might have thought the weather hot, others may have thought the long horse-car ride out from town dusty; but Peter fairly basked in happiness. Roses everywhere, girls plenty, *que voulez-vous?*

He stalked about the asylum-like brick building; his feet stuck in the soft asphalt paths, melting like wax in the heat; he visited picture gallery, laboratory and gymnasium, library, offices and observatory. He met lovely woman everywhere. He looked up into every face, but he did not find her. It was noised about, as such news will be noised in the student sisterhoods or most strongminded college, that a rich bachelor had come to St. Matthew's to look for a wife, and it would be virtue to say that his search was a matter of indifference to the students. He was introduced to a dozen. He bowed to the wittiest, he knelt to the prettiest; but how could he kiss the one he loved best till he met Her? Every now and again he fancied some elusive resemblance, but on looking at the picture he found his mistake. The brow was perhaps like his wife's, or the nose or the mouth; but none had her steady, soul-stirring gaze; her eyes looked up into his with the clear light of her myriad-minded soul.

The day wore on. The brass bands brayed; the Seniors (he remembered She was one of them, and he very soon settled he had wasted time looking for Her among Freshmen and Alumni) read their histories, poems and prophecies; they cheered each other; they laughed at jokes which were old when Noah wrote the almanac and prophesied areas of wet weather for the space of about forty days; they danced around their ribbon-girt tree, a miserable elm sapling already eaten by worms; they sang songs and glees; they made orations over a spade which is reminded each year that it turned the first sod for St. Matthew's; and finally the public exercises were over and each tearfully smiling Senior became again a private character.

Now was Peter Van Winkle's chance. He took a drowning look at the picture and stepped boldly across the white and yellow daisy patches to meet his fate. He wished too late he had asked Mrs. Griswold more particulars, but he had been in such a hurry to secure the portrait that he had learned nothing, save that it "was of the Senior Class."

This wife-searcher resolved to be presented in turn to the whole forty-seven of them, and if necessary offer himself to each one separately, and wishing all would reject him, save the one whose portrait he cherished.

"By what name shall I learn to greet her,
I know not now, but shall know some day.
She is standing somewhere ——"

He broke off humming and muttered, "somewhere—yes, but where?"

However he went to work, and by the time the usual strawberry short-cake collation was served, he had reached the R's of the class, and was going through bravely to the S's, the T's and the U, V, W's. Guests began to say good night; the sun set over Mill Cove Lake; the lodge was red in the glow of sunlight; and Peter the Great began to be disheartened. He had met all the girls whose names began with V and W. His *fiancee* would not run counter to the old rhyme:

"Change the name and not the letter,
Change for worse and not for better."

No; she must be among the X, Y, Z's. He thought of Xantippe, and half dreaded a scold, but the memory of the pictured face comforted him. That sweet mouth could not pout, those eyes could never flash with anger. He was desperate, and when he was finally presented in the moonlight to Miss Yulee, and she told him none of her class had names beginning with Z, that she was the Doxology, the Omega, the Amen of '8–, he groaned aloud.

"But, I have her picture in my pocket," he pleaded nervously, and then he drew it from its hiding place, much creased and a little stained with yellow, for some amateur, it will be remembered, had toned it, and unwashed hypo, like murder, will out. Miss Yulen unrolled the tight wisp and took a peep. Unmounted photographs seem to have some centripetal force to wind up on themselves, which has never been explained.

"Where did you get it?" She asked, in suprise.

It was evident to Mr. Van Wickle that she had seen it before, and he doubted whether it were wiser to be diplomatic in his answer, or to throw himself on her charity. She was a tall, handsome girl, and possibly might not relish a love declaration addressed to a classmate.

"A friend gave it to me three months ago," he answered presently, leading his beautiful companion farther away from the gaudy Chinese lanterns under the soothing shade of some fir trees. "Let us sit down and I will tell you my secret."

Miss Yulee gathered her lace flounces about her and sat down gingerly on a garden-bench. She had only been half a day out of school, but she smelt wedding-cake in the air. Peter Van Wickle was old to be sure; he must be past forty, maybe fifty, but he was rich. She had determined never to marry, as she wanted to study medicine, but, but, but—a white veil and bridesmaids, and afterwards all the dear college girls to visit her. Maybe he was not so very old. As he bent over her in the perfumed dark of this perfect June night, he looked well, not a day over thirty-nine and eleven months, and she would be twenty in August. She made up her mind she would let him offer himself and afterwards, well afterwards ——

"What did you begin to tell me Mr. Van Wickle?" Such a good old Dutch name; probably he owned a manor grand on the Hudson.

"I have but one thing to tell you, or to tell any one, he faltered."

She thought it was a queer beginning, but tried kindly to help the lame dog over the stile.

"What is it?"

"I am in love."

"Ah!"

He was certainly limping badly.

"You will be my friend for life, and I will be yours if ——

Miss Yulee drew herself away a trifle. "A friend for life," she muttered; was it worth while ruining her lace flounces in the dew to hear such platonic words?

"If you will look closely at the picture and tell me which one of your forty-seven classmates it is, I will be your friend for life."

This promise seemed a good phrase, but when Peter Van Wickle repeated it a third time, Miss Yulee, to his surprise, handed him back the photograph with a mocking laugh.

"You have fallen in love with this?" she asked.

"Yes," answered Peter boldly, "and I shall make her my wife. Only tell me which one of you she is?"

In his eagerness he had forgot to say how lovely he had found them all, but like an arrow he pressed straight to the heart of gold.

"Perhaps you think she will refuse me? Ah, then, you don't know how tenderly I shall sue for her favor. I will serve seven years, seventy times seven." He was getting biblically confused, but still went on. "I will love her, and will go on my knees before her, only tell me who she is. Rich or poor, dull or clever, high or low. I love her! I love her!! Tell me, I beg you, who is she, what is her name?"

"The Impossible She," replied Miss Yulee, purposely misquoting the poet. "Unless you are Brigham Young or Bluebeard you can never wed her, because—

"Because?" repeated Peter, breathless.

"Because she is not any of us; she is all of us in one. Mrs. Griswold graduated in '79, and she came back last winter and took our whole class on one plate, your wife's picture is only a composite photograph."

HINTS ON COMPOSITION AND SELECTION OF SUBJECT.

BY XANTHUS SMITH.

[Read before the Philadelphia Amateur Photographic Club.]

An important element of success in the pursuit of landscape photography is the attainment of the power of selection. Those persons who are naturally gifted with that kind of taste which enables them at once to perceive those combinations and effects in nature which will make the most agreeable or effective pictures are indeed fortunate, and although they may receive much gratification and instruction from looking at the works of eminent artists, and seeing under what effects they have treated the various scenes represented by them, such study is not so much a matter of necessity with them as with those who have been less favorably endowed. Sir Joshua Reynolds says: "Nothing is denied to well-directed labor; nothing is to be obtained without it;" so that none of us need despair of attaining excellence if we do but give our earnest attention to our pursuit.

Hundreds of views are constantly being made that are of no account whatever, except inasmuch as they may be pictures of places possessing interesting associations to those who are taking them; as we see in show-cases innumerable faces, admirably done, and each one highly interesting to self and friends, but passed over with the utmost indifference by everybody else. When the object becomes the making of a picture, the producing of a work which, from its possessing certain intrinsic qualities, giving it a wider interest, and ranking it as a work of art, more or less, it is necessary that we discriminate between the beautiful and commonplace in nature. It will not then do to set our camera up in the first country road that we come to and focus straight along it, being satisfied with its parallel sides, lined with stiff fencing and rows of straight-stemmed cedar trees. We must go further and see if we cannot find a spot where nature will spread before us some of her unfettered charms. Trees, remarkable either for the lightness and grace which characterizes some varieties, the fullness which marks others in the vigor of maturity, or for the picturesque ruggedness of decay; some sheet of water, even though it be not river or lake, where we will get mirrored reflections, sparkling lights, and flat, quiet masses of shadow. If we can get a mountain peep in the distance, how fortunate; if not, perhaps we can find a rolling country, dotted with receding masses or groups of fine foliage. And our foreground, let us, if possible, secure some variety in it. Bare earth, varied by patches of vegetation, rocks, stumps and old logs, rather than flat, unbroken stretches of either grass or earth.

Having arrived at a point where we have found some elements of a good picture, let us so compare them by moving from point to point that we get our distance open, and our main groups on either side; but let the group of one side be more important, if possible, than that of the other. There is nothing which makes a more picturesque contrast than a fine, full mass of foliage balancing some quaint, denuded stem, festooned with vines. Our foreground should have some important feature of interest, either suitable figures, cattle, or something striking in form, or light and dark, and not precisely in the center, but generally a little to one side or the other. It is seldom that such points can be put down in the extreme corners with good effect, as they carry the eye out too far from the center of the work. Although the plan of composition is occasionally tried by landscape painters, of placing the principal group of trees in the center of the work, it is seldom successful, the open spaces of distance, seen upon either side, equally arresting the attention, and so dividing it that the work is robbed of that unity of impression which should go towards making it agreeable.

There is at the present time a prevailing want of interest in and sympathy with the good art principles seen in the works of the eminent landscape painters who were living and working during the first half of this century, and it is chiefly the outcome of Ruskin's pre-Raffaelite movement. This school and their adherents strove to attain certain sentimental qualities which scarcely belonged to the province of art to convey, and the only art quality which they perfected was that of imitation, which is considered the lowest quality of art; and as genuine pre-Raffaeliteism was dying out, the great period of scientific investigation set in, turning the minds of reading and thinking people in the direction of materialism and research; and the consequence is that now a picture is not valued as a piece of beautiful coloring, or composition, or effect, as it was formerly, but it must tell some story, or be a wonderful piece of imitation of something, it matters not much what.

Many pictures that are painted now have so little true art in them, and are so solely dependent upon the incident they represent for their aim, that a simple pen-sketch would fulfill their purpose just as well as the painting. I think this is somewhat to be regretted, and I hope that a taste may grow up again more in sympathy with true art. Turner, Stanfield, and the many good landscape painters who were working contemporarily with them, seldom, if ever, dealt with nature in her commonplaceness. They sought her out in the picturesque and the beautiful, and did not scruple to gather together what was near and characteristic to a neighborhood to enrich and beautify their compositions; they delighted in the effects of storm and cloud and sunshine, which give grandeur and poetry to a scene; and I was going on to speak of their coloring, but this we have nothing to do with. When we can fix the image as seen on the focusing screen, coloring included, as we do the light and dark alone, the painter's occupation will indeed be gone.

As we must confine ourselves exclusively to composition and effect, let us consider a few of the first principles to be looked after in the successful getting up a picture. Working, or rather presenting our subjects, as we do upon a flat surface, every artifice should be used to overcome this perpendicularity of plane, and have the effect of leading the eye into the picture. Judicious composition and a proper amount of atmosphere are great aids in the retiring of distant objects and the advancing of nearer ones.

A picture in which a number of conspicuous objects come one over the other, or successively one under another, must appear flat, and especially so if the objects just touch or cut upon one another, and it must to a great extent be by the lightening of shades that we get a distance to recede into the picture. In a landscape reproduction, where our shadows are as black in objects miles off as they are in the immediate foreground, claiming an equal attention, we can get no retirement, and by cutting definitely and harshly against the sky in every part a disagreeable hardness is given to the picture. As a means of obviating this hardness, in addition to working during a prevalence of atmosphere or haze, I would recommend, whenever possible, the introduction of skies, either by printing in, or by washing on the back of the negative with a little opaque. When the sky in the negative is not too dense the latter plan will answer very well, and the addition of a sky to a landscape view is of immense value, not only on account of breaking up the flat blank space, but it may be made the means of completing the composition of the work; it also serves to carry off the distant features gradually, and repeats the dark tints of the foreground. There are however two conditions when skies are better left out: the one when they are got by laying cotton indiscriminately, and the other when printed in from negatives that are too strong and too bold in their masses, and either overpower the subject of the picture completely, or else divide the attention too much with it, and thereby rob it of its precedence.

(*To be continued.*)

PHOTOGRAPHING COLORED OBJECTS ON PLATES BATHED WITH ERYTHROSIN.

BY CHARLES EHRMANN.

[Read before the Photographic Section of the American Institute.]

I FEAR that many of the members here present will not be satisfied with what I am about to show them this evening, for I do not come to exhibit reproductions of very beautiful works of art, like the paintings of Meissonier or Bougereau, printed from retouched negatives by laborious mechanical methods; neither am I prepared to show you photographs of spectrum colors.

As a substitute for the sun spectrum we (meaning many practical photographers) have made our experiments with color-sensitive films upon artificial spectra, and noted our results in comparison with those of our eminent instructors in Germany and Austria.

Artificial spectra, or, rather combinations of pigment colors resembling the colors of the spectrum, are somewhat difficult to contend with, as various coloring matter gives very varying results. Of several attempts made I will mention pastel colors, which show too light on the plate in every way, while those of silk or satin ribbons are indecisive, leading to many errors when judging of true color values. Oil paint is generally too dark; aquarelle better. Of all the artificial spectra made, that of E. Bierstadt, constructed of colored matt paper, is probably the best.

Anxious to keep pace with the progress made everywhere, and being convinced that color-sensitive methods must be eventually resorted to in sky-light and reproduction room, my aim has been to experiment with brightly colored objects as seen in the every day walks of life, and I have photographed chromolithographs and the like, selecting such as showed very brilliant and sharply contrasting colors.

Before I take the liberty of laying a few of my results before you, I deem it necessary to say something of my mode of working.

What has been done in color-sensitive processes since 1882 is generally well understood. Of the 144 different sensitizers which Dr. Eder has experimented with, only a few have been retained as being effective, among them the eosine group and the chinolins are perhaps the best.

When Clayton and Tailfer published their process of dying emulsions with eosine, they said that the same effect might be obtained by staining a ready coated plate instead of incorporating the dye with the emulsion before coating.

Other European experimenters denied this, and asserted, until quite recently, that a stained or color-bathed plate could never give the same results as a colored emulsion. For my own part I had no other means at command than to bathe plates. A few attempts to color emulsion failed totally, and other experimenters, I am sorry to say, did not do much better, so that, as we were to consider the enormously costly imported azalin and eosine plates, there was nothing left us but to go on in the other way. As the suggestions made by A. Tailfer proved successful, I continued to work in the way proposed, and I do not think that of my many experiments I can remember half a dozen made on emulsion-colored plates.

We cannot deny that bathing plates with the aid of ammonia is practical enough for all purposes.

We can prepare any number of them, large or small, at a moment's notice, the operation taking but little time and requiring no extra skill, and we can expose the plate wet or dry.

Stained plates keep much longer then even their advocates give them credit for, and I will show you a picture from a plate exposed thirty-five days after being sensitized for color. I think that will do.

Of dye stuffs used we will see the effects of eosine, erythrosin, pure and when mixed with cyanin, and also those of azalin, or, more correctly speaking, if we wish to express the compound nature of the color, chinolin red plus chinolin blue. Eosine has not given the generally good results claimed for it. Cyanin or chinolin, the most red-sensitive substance known, is extremely difficult to work with, and has been applied as an addendum only to other matter, while for total effects, or when a variety of many colors are represented in one object, none gives better results than the erythrosin. With it we reproduce yellow in all shades quite correct, equally so green and orange, and while the action of blue and violet is retarded by the color screen, we have red only that does not always respond properly. Not all reds copy alike. Minium I found to be the most difficult, and oxide of mercury next to it. Iodide of mercury and vermilion show much better. Carmine, lake, madder, not being pure reds, copy easy accordingly.

For general work the interposing screen cannot be dispensed with, be that a cell containing a colored liquid or a colored glass. I generally use a white, plane, parallel glass, coated with a collodion colored with a tincture of Bengal curcuma, to which I add a little eosine to make it more of an orange tint. Sometimes I put a drop of cyanin solution to it to give it a greenish cast. When to use screens of different color or shades of color, practice will soon tell.

When the color screen is used the time of exposure must be extended. Comparing it with that of an ordinary plate, we can say the proportion is from 1 to 3 or 4; seldom greater than this.

A great difficulty occurs when judging color brightness, and I can assure you that out of a dozen people not three will see color alike. To some a blue appears darker, or a red lighter; to others it seems impossible to see yellow correctly. Thus I have found why so many differing views on color-sensitive results can exist.

Erythrosin, giving the best general results, has become an article of trade. It is prepared in such convenient and compact form that it is available to a practitioner as well as tyro, and as long as the formula accompanying the dye is followed, there can be no doubt of brilliant success.

A VOYAGE TO THE MOON.

BY O. G. MASON.

[Read before the Photographic Section of the American Institute.]

The moon has been conceded an object of interest in all time and by all people. We find it is mentioned in the most ancient writings of the ecclesiastical and the profane.

The rude and the barbarian have looked upon it with awe and wonder.

The civilized and enlightened have studied its ever-changing phases with deeper interest than any other visible non-terrestrial object.

Very many mothers have taught their children that the man, whose image they pointed out on its surface, was an object of terror, whose bundle of sticks often came to the backs of disobedient youth.

The savage and uncivilized have counted their seasons and the length of their lives by its lunations.

Lovers in many climes have whispered their joys and pledged their fealty by its reflected light, and counted the first circle of its changes after their union as the honeyed period of human existence.

To the astronomer, the moon has ever been an object of primary interest. It has been the first object to fix his attention when his newly adjusted telescope is used for actual observation. He may try its penetrating power upon some star group in the distance of unfathomable space, or seek a test for its definition upon the satellities of some great planet, or the separation of a star from its companion, but his first enthusiastic study is almost sure to be the surface of that luminary which has all his days been an unanswered question.

The student of nature is not content with the opinions of others, when equipped with a first-class telescope; he wants the personal "I see" upon which to base his opinions regarding a subject upon which so many conflicting arguments have been advanced.

He has learned that the moon's distance from the earth has been accurately measured, that its mass has been calculated, and its density determined. These are facts which have been mathematically demonstrated. He has been taught that "figures do not lie," but he is often a little skeptical regarding the truthfulness of all the theories of those who have made the figures. He wants to go over the ground himself; and that there really is ground for him to go over is the one fact for the demonstration of which some proof is now offered. When contemplating a long journey, we usually study certain conditions which it is expected may be met with. But in our present case, of whom shall we inquire? By one careful observer we are told that the temperature of the whole country we seek is far above that of any place on the earth; in fact that millions of years of unclouded sunshine, where the days are 354½ hours long, has changed the whole surface to a field of glass. That all water and air have been burned out of existence. Another tells us that the surface is a vast field of ice, and that there is plenty of the rarest kind of air. That, instead of crawling along, as we do here on the earth, pressed down by a load of fifteen pounds to every square inch of our superficial measurement, we would there be so cheered and buoyed up by our surroundings, that the heaviest person in our party would weigh less than thirty pounds. Competent engineers tell us, after careful measurement, they find that our journey would be one of more than 238,000 miles, a distance for the traveling of which a fast express train requires about three hundred days.

One of our party suggested that we should go early in the evening, as the moon must then be much nearer than when far up in the zenith. But that is a mistake. When the moon is just above our horizon, the length of our journey would be about 4,000 miles greater than when she appears highest in the heavens.

The moon looks nearer when on our horizon, because we compare it with terrestrial objects in the field of vision. To dispel the illusion, look at the rising moon through a tube which will shut other objects from the view. A newspaper or large sheet of wrapping paper, rolled to a diameter of one or two inches, will serve for the experiment.

Apparent size is often far from the actual. As an illustration of this, most of us would say that the moon looks as large as the sun. But in reality it contains only $\frac{1}{70000000}$ part as much matter; this apparent similarity of size resulting from the sun being four hundred times further from us.

One of the most curious and interesting relations of the earth and moon is found in the rotation of the moon around its own axis in the exact time required to swing in its orbit around the earth; consequently the same side is always towards the earth. And if the moon had no libration, we would never see more than one hemisphere of its surface; but as the moon has a swinging motion, similar to that of a slowly rotating top, some little distance beyond her north and south poles becomes visible. If the moon is inhabited, what a field there is for the enterpise of some lunar Cook, or other energetic excursion organizer, who would liberally advertise trips to see the earth. The length of the journey from the center of the opposite side of the moon would be less than the distance between New York and San Francisco. He could very truly call the show a big one, and those who purchased his tickets would—when they came in sight of this world of ours—see an object more than fourteen times larger than any they had ever before looked upon.

A lunarian's walk by full earth-light must be a very brilliant affair in a light such as we would get from fourteen full moons.

But time is passing, and each one must make his or her own calculations regarding the inhabitants of our satellite.

At the nothwest corner of Second avenue and 11th street in this city, stands a large, plain, well-built brick dwelling, which has during many years been the city home of a man known and esteemed among the great minds of his age as a leader whom it is safe to follow; a man, the best years of whose life, and a large part of whose ample fortune, have been devoted to the advancement of astronomical science.

To the older members of the section, it will doubtless seem quite appropriate that we are thus reminded of the first President under whom our meetings were held, Lewis M. Rutherfurd.

To Mr. Rutherfurd is due the credit of organizing the plan by means of which the trip to the moon, partially described to-night, was made possible.

Upon an ample lawn in the rear of the house before alluded to, was erected, in the year 1856, one of the best private astronomical observatories of the time. The building is of brick, and in the main consists of a circular observing room, twenty feet in internal diameter, with a projection on the westerly side for transit and computing rooms. The twenty-foot dome of the observing room rests upon twelve wheels, equally spaced in the iron coping of the brick wall. The lower edge, or base, of the dome is fitted with a band of cogs, which geer into a chain-belted wheel, actuated by a crank in the wall of the observing room. So admirably is this mechanism constructed, that the strength of a child is sufficient for setting in in motion.

On two opposite sides of the dome, from base to apex, are openings, two feet in width, which are closed by shutters easily worked from below, and so devised as to screen the room from wind when open.

In the center of the room, resting upon a firm foundation, deeply embedded in the fine sand underlaying the whole building and grounds, stands the telescope pier, a broad, high block of stone, and around this, but not in contact with it, is laid the floor.

In the transit room, 189 feet northwest of Second avenue, and 76.3 feet northeast of 11th street, the transit pier was erected.

The principal instrumental furnishings of the establishment consist of a first-class equatorially mounted telescope of 13 inches aperture and 14 feet focal length; the readings of position are upon 18 and 20-inch silver circles.

The driving power is a Remontoir escapement clock of the highest merit. So acurate is its movements that the photographic image of faint stars, requiring long exposure, have a wonderful sharpness of outline.

The photographing of celestial bodies, attempted at various observatories previous to 1863, left much to be desired in definition. From some experiments made by Mr. Rutherfurd about that time, in connection with a Government expedition, he was led to believe that a lens could be so constructed as to greatly improve astronomical photography, and, by a purely scientific method, he began his work of solving the problem.

By the use of the spectroscope he found that a lens of crown glass, so constructed as to shorten the focus of the observing telescope about $\frac{1}{10}$, gave promise of good results. Through the use of specially devised mechanism and methods of trial—the description of which would require too much time—he constructed with his own hands such a lens. Only those who have attempted to grind, polish, and correct a 13-inch lens can well understand the labor involved in such an undertaking.

When, on the night of March 6, 1865, this newly-devised method was proven to be correct, by the production of the first really good photograph of the moon, it was at once expected that photography would occupy an important position in science, and add greatly to the advance of astronomical observation.

That such expectation has been and is now being realized, no one questions.

Within the next few days will be held in Paris a congress of astronomers for the express purpose of apportioning the labor of making a photographic map of the entire heavens, and it is expected to complete the work within ten years, and that these plates will show a vast number of stars which no human eye has as yet seen, even with the aid of the most powerful instruments.

Certainly, we may be pardoned for expressing a little pride in the fact that all this was begun more than twenty years ago by a citizen of New York and a member of our Section of the American Institute. From his observatory we started for the moon, or, rather, under its great revolving dome, found means for pulling the moon down, to be hung on the wall for our inspection.

Our party consisted of three persons, whom we will designate as Numbers One, Two, and Three.

At 10.30 P.M. Number Two entered one of the computing rooms across the lawn and called "time," by reporting the zenith clear and the air still favorable for first-class work, a coincidence averaging about twice a year in New York City.

Upon this announcement Numbers One and Three bundle up in heavy clothing, as though about to visit the North Pole. They know the weather is crisp and cold where the next few hours are to be passed.

As they enter the door leading to the dome, under which stands the great equatorial, the silence is broken only by the escapement-wheel of the tall sidereal clock standing against the western wall, as its heavy pendulum swings to and fro with an accuracy most wonderful.

No other sound. Not a word is spoken; each knows his assigned duty, and to it he gives his undivided attention. All feel that such time is beyond value, and must be utilized to the fullest extent.

Number One has charge of the telescope. The dome is revolved into position, and a long, narrow section, from base to apex, swung open, leaving a strip of clear sky visible, in the center of which the moon glistens like a disk of burnished silver. The great instrument is swung into approximate position; the driving-clock, constructed to run one hour, is wound; and while Number One is busy making his final adjustments, we will watch Number Two, who has charge of the photographic department of the expedition. He has lifted a trap-door in the floor near the stone pier, passed down a short ladder, and entered what may well be called a troglodyte's laboratory, lighted by one small wax candle, as care is necessary to keep the temperature low. After a few minutes the pupils of his eyes are expanded sufficiently to permit seeing the bottles, baths and dishes required for his work. But we have no time to describe his chemicals or his method of using them.

Meanwhile Number Three, the timekeeper, has adjusted the chronograph (in whose record there will be no personal equation) placed his small, dim lights where they will illuminate the clock and the room just enough to see what is going on, and then taken his position, where he can hear distinctly the beat of the long pendulum, as its lower end, terminating in a hair-like wire, swings at each vibration through a glistening drop of mercury, closing the battery current uniting chronograph, clock, and shutter-adjustment on the telescope.

All is now ready for action. Upon a signal being given by Number One, a sensitized plate is handed up from the cave, placed in its receptacle at the ocular end of the great instrument, just as it would be put into an ordinary camera.

The touch of an electric button, and away we go, or rather, we all keep very still.

The great clock says one, two, three, and the plate holder is opened to the light of the full moon, whose image the great glass eye, fourteen feet away, has condensed to a circle of $1\frac{3}{10}$ inches. The buzz of the chronograph-wheels is just audible as it records the time in hundredths of a second. The heavy pendulum has beat one, and the long focused eye is closed, the plate holder is returned to the troglodyte, who reaches from below to receive it, as he hands another up.

And so the work goes on until early morning, when the weary and thoroughly-chilled party seek rest in a comfortable temperature and among surroundings which their animal natures deem far more enjoyable.

One of the old Hindoo systems of theology taught that the souls of men could leave their bodies for short periods of time in quest of knowledge, where no human body could ever go, and upon their return by imparting to their fellow men the wisdom thus gained, an endless existence of perfect happiness was secured.

Thus wise must have been our trip to the moon. The mind or soul reached out with a question. Was it answered? Let us see if any knowledge gained can be imparted to others.

[Then followed the lantern exhibition of many slides, shadowing the moon's surface; its mountains, more than twenty thousand feet high; its craters, fifteen and eighteen thousand feet deep, and from one to three hundred miles in diameter, were graphically described, and an explanation of the various theories advanced regarding the existence of air and water on the moon's surface; and some of the arguments used in support of such theories were examined. Dr. Mason closed his paper and description of the work done at the observatory by expressing regret that the telescope had been recently placed in the observatory of Columbia College, where he feared vibration would prevent its use for fine photographic work.]

PHOTOGRAPHY BY GASLIGHT.

BY JOHN BARTLETT.

[Read before the Photographic Society of Philadelphia.]

There is nothing novel, nothing strange in the fact that certain salts of silver are sensitive to the moderate amount of actinic force contained in the flame of ordinary illuminating gas. Quite early in the reign of collodion some excellent work was accomplished by the use of such illumination in photographing interiors and dark places, but the difficulties attending the operation, the length of time required for exposure, and the consequent danger of the drying of the plate, did not contribute much to the popularity of the process. In fact it was used only in extreme cases; frequently merely to show the possibilities of the method.

With the advent of the extremely sensitive bromide of silver gelatine dry plate, one might suppose it would have advanced in favor, but the superiority in power, convenience of application, and cheapness of the electric light, considerably depressed the general interest for it as an artificial source of illumination.

Portraits have been successfully made by gaslight, and even apparatus devised to utilize to the best advantage the force of the flame, but I think it may be safely said that at present no gallery in the world employs it.

Our object is not to show the superiority of gaslight over the other artificial illuminators, though we do think, had it been allowed in the struggle for existence to appropriate more of scientific and general interest it would have differentiated much further, inasmuch as it possesses certain inherent good qualities which its more favored rivals cannot claim.

We merely wish to call attention to its great value in photographing interiors. Indeed in this province of the art it possesses advantages over daylight in softness of the general effect.

In our experiments we did not use any apparatus whatever, not even reflectors, employing merely the light of the ordinary burners, protected by ground glass globes.

The source of light was not intense, five bat-wing burners of a chandelier suspended from the center of the room, 15 x 30 feet, the camera being placed at either extremity, and hence necessarily directed towards the light, but low enough to prevent the flames appearing on the ground glass. A Ross rapid symmetrical lens, 6-inch focus, was used, and exposures given from ten to twenty minutes. The results will be shown at the close of the meeting, by means of slides in the lantern. We imagine no one would be able to distinguish them from good interiors taken by daylight.

We have photographed the same room when illuminated by diffused sunlight, but have not obtained results as uniform in lighting. Daylight gave more violent contrasts, the darker portions of the room lacking much in detail, while the highly illuminated parts were too intense. It is especially on account of the evenness and general distribution of the light that we prefer gas to ordinary daylight.

Its advantages over burning magnesium wire are even greater. Our experiments with this pure white illuminator gave very harsh contrasts in light and shade, although we sought to modulate its action by tissue screens, and by distributing the illumination as much as possible. We did not try the electric light.

The exposures of ten minutes with gas lacked somewhat in detail, showing under-time; but those of twenty minutes, as you will see, are pretty rich in detail even in the deep shadows. The plate we employed was, of course, the highest sensitometer number we could secure—some of Cramer's recent extremely sensitive brands. With the twenty minutes' exposures we developed with pyro and potash—of the ordinary stock solutions:

Pyro	2 drams.
Potash	1 dram.
Water	2 ounces.

which sufficed to bring up all the detail and to give good density without any extra addition of accelerator, which, we think, demonstrates the truth that an evenly-lighted subject really requires less time with a moderate light than one violently illuminated with a strong light.

While making these gaslight photographs, we were induced to try the action of the yellow gaslight in rendering the colors with orthochromatic plates.

Carbutt B plates and Seed plates were first placed in a preliminary bath, consisting of

Ammonia	1½ drams.
Water (distilled)	7 "

and allowed to remain for a minute or two. They were then transferred to the orthochromatic bath, made according to the formula given in a package of Flandreau's Orthochromatic Solution:

Erythrosin	1½ drams.
Ammonia	2 "
Water	5½ ounces.

here they were rocked for a little over a minute, taken out, drained and dried in an ordinary drying closet.

They were exposed upon objects of blue, yellow, red, and green colors without the interposition of the yellow screen, making use of the light of a coal-oil lamp with a reflector placed near the objects, in addition to the light of the gas flames. The time of exposure with the B plates was fifteen minutes; with the Seed two minutes. The ordinary developer of potash and pyro was used. I was troubled much with fog, especially with the Seed plates, whose sensitiveness was probably affected by the ammonia employed, but the results obtained in the rendering of the yellow and orange were surprising. I have a couple of prints, one from the fogged Seed plate, two from the clear Carbutt plates, which show this remarkable action. The oranges in the basket were very orange in color, while the flowers were hyacinths of the palest blue, almost white—nevertheless, the deep so-called adactinic color of the fruit is rendered as a high light, as in nature, only a few degrees below the flowers.

In the other picture the long-necked vase is of a bright chrome-yellow color, which ordinarily is translated dark; the vase immediately behind it is ultramarine blue, the large urn light green, while the recumbent vase is vermilion. This last has scarcely taken better than with an ordinary plate.

The erythrosin therefore would seem to depress the action of the blue, and to render the yellow, orange, and green in their true relations; but not the reds.

Probably it would make an excellent plate for the yellowish greens of spring foliage.

I will confess I made some attempts at portraiture with ordinary plates by gaslight, and, craving your indulgence, will let you see them, knowing you will be lenient in your judgment, when you find that the subject was obliged to endure martyrdom for three minutes.

I show them merely to call the attention to the possibilities of modeling with light and shade.

I found, by using a small hand reflector of card-board and a shader, one might, if possessed of the skill, model in an artistic manner, the head, by directing the light and shade to any desired part. Of course means could be devised to shorten the time of exposure to less than a minute, and by keeping the reflector and shader in gentle motion, any required degree of light and shade could be secured, and much softness given to the image.

One recommendation has photography by gaslight. It is independent of time and season and state of weather.

We could not help noticing how strange it was for us to be taking pictures in a warm, cosy room, while without the wind and the rain were striving for mastery.

OBITUARY.

J. B. OBERNETTER.

Again the photographic world has lost one of its most genial and indefatigable inventors and investigators, J. B. Obernetter, who died at Munich on the 13th of April, not quite 47 years old. Closely connected with the development of photography during the last twenty years, there is hardly a photographer who is not familiar with his name, one honorably mentioned on both hemispheres and highly esteemed everywhere.

Obernetter was no child of fortune in the common sense of the word. No protector's helping hand elevated him to his position. He was a self-made man, made so by his own energy and strength, his indefatigable diligence, combined with profound thorough knowledge and eminently practical common sense.

Obernetter was born on the 31st of May, 1840. He was the son of an inspector of the royal topographical bureau at Munich. In his early days he showed a great inclination for the study of chemistry, and devoted himself later on entirely to that branch of science, studying at the University of Leipsic under Professor Erdman; at Heidelberg under Bunsen; and finally at Munich under the guidance of Pettenkofer, Liebig, and Kaiser. It was Liebig that advised him to devote himself to photography.

In 1860 he entered the photographic establishment of Joseph Albert as chemist, and here it was where his first inventions found application.

In 1863 Obernetter established himself and invented a process to burn in photographs upon porcelain, and at the same time a method to burn in photographs upon glass for the production of paintings.

During this time the first idea for the production of lichtdruck pictures was given by Albert. Obernetter, with an interest for everything new, took up the idea, and, independent of Albert, improved the method. By a friendly exchange of their mutual experiences the lichtdruck process was brought to its present advanced state. His inventions in color-lichtdruck and zinc-etching may also be mentioned.

The year 1887 brought the invention of the collodion paper, the most durable silvered paper yet made.

His last labors were to produce durable color-sensitive plates for exposure without the use of yellow glass. By eliminating the latter and adding fluoride of silver to suitable coloring matters, he succeeded.

While these studies and labors required his full intellectual powers, he occupied himself also with the invention of copper lichtdruck, bringing this process to a completion hitherto unknown.

On the 11th of April he wrote to a friend: "My heart disease will not let me rest. I am not able to work and have to take bromide of potassium every day. I am trembling and cannot write more." Two days later he was dead.

Notwithstanding his eminent services rendered to science, Obernetter was plain and simple in his habits, a warm-hearted friend, pleasant towards everybody, and devoted only to his art and his family.

We mourn his loss, but his works will survive him.

OUR ILLUSTRATION.

WITH this issue of the BULLETIN we give a photo-mechanical reproduction of the curious triple picture made by Colonel Pennington, at Fortress Monroe. It is the worthy Colonel playing chess, with himself as an antagonist, and also himself looking on. The manner of producing this interesting result will be a problem for many of our readers, and we shall be glad to hear how they would accomplish the result. Colonel Pennington will furnish his method of procedure in a future BULLETIN.

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

THE Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A CASH PRIZE of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

AIR BRUSH PRIZES.

The Air Brush Manufacturing Company will offer two prizes at the Convention of the Photographers' Association of America to be held in Chicago, August, 1887.

An air brush will be given for the best portrait in black and white, finished exclusively by it, and another will be given for the best water-color portrait finished exclusively by the air brush. Portraits may be of any size and upon any print.

The awards will be made during the Convention by three judges who shall be members of the P. A. of A., and who shall be chosen at the time of the Convention.

Each certificate of award will be accompanied by an order upon the Air Brush Company for one complete air brush.

W. H. WALMSLEY'S PRIZE.

W. H. Walmsley & Co., of Philadelphia, offer two prizes for competition at the Chicago Convention.

First Prize.—For the best portraiture, from cabinet to life-size, made with Beck's "Autograph" Lenses of any size, not smaller than No. 6, one "Autograph" Lens No. 7, of the cash value of $100.

Second Prize.—For the best work, other than portraiture, such as landscapes, architecture, interiors, etc., made with Beck's "Autograph" Lens of any size, one No. 5 "Autograph" Lens, of the cash value of $60.

◆

Professor Eder and M. Steinheil took part in the Astronomical Congress in Paris, at which they were the delegates of their respective governments. The visit was a short one, but the Parisian photographers did their best to organize means to make their visit a pleasant one, a highly representative committee of all branches of the art science having been formed to bid them welcome. At a dinner they were informed that their labors were well appreciated in France, and during their visit leading photographers like MM. Quinsac, Lemercier, Boussod, Valadon & Co., Nadar, and Liébert, gave them full facilities for the examination of their establishments. The Salpêtriére was visited by Dr. Eder, in company with M. Weiss, director of the Observatory at Vienna. Dr. Charcot received them, and the photographic works of M. Londe particularly arrested their attention. They expressed their regret that Austria had not a photographic laboratory of the same kind annexed to an analogous hospital. They examined a multitude of photographs of interesting pathological cases which amply demonstrated the useful nature of the proofs, taken often under such circumstances of movement that instantaneous exposures alone could be employed to accurately record the facts, and to afterwards afford facilities for studying interesting symptoms.—*Le Moniteur de la Photographie.*

◆

We are very much pleased with the Bulletin. A. Walker,
Librarian Amateur Photographic Association of Victoria, Australia.

The Bulletin is one of the photographic publications I never think of doing without. W. H. Lockhart, Ohio.

ANTHONY'S
Photographic Bulletin.

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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
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E. & H. T. ANTHONY & CO., Publishers.

ON THE ACTION OF DIFFERENT COLORING MATTERS UPON THE BEHAVIOR OF BROMIDE OF SILVER IN THE SOLAR SPECTRUM.

BY DR. J. M. EDER.

(From Original Memoir of the Author.)

In addition to my previous researches[*] upon the behavior of bromide of silver towards the solar spectrum, and the influences of additional coloring matters, I examined a number of the latter, in which I paid particular attention to those of an homologous and isomeric nature, so far as they were accessible to me.

In my short preliminary notice in the Vienna *Academic Journal* of April 1, 1886, I mentioned the more important of these new sensitizers, whose properties I will now more fully describe. At the same time I took into consideration the influence of the presence of bromide of potassium in bromide of silver; the connection between absorption and sensitizing; and the importance of yellow or red screens before the spectral apparatus for spectrum photography with colored and ordinary bromide of silver.

The practical methods which result from these researches for spectrum, microscopical and astronomical photography will be given in a separate treatise.

Cœrulein.—This coloring matter, made by heating gallein with sulphuric acid, is nearly insoluble in all solutions except those of an alkaline nature, in which it dissolves imparting a green color. More suitable is sulphite of cœrulein, which is a double compound of cœrulein with bisulphite of soda and soluble in water. Cœrulein in alkaline solution makes the bromide of silver considerably more sensitive to the less refractive rays (to the extreme red). It is the best sensitizer for the rays in the region of the Fraunhofer line A which has come to my notice, and surpasses the naphthol blue in red sensitiveness, as also in the purity of the photograph, that easily causing irregular reductions and fogs.

To sensitize bromide of silver gelatine plates with cœrulein, I proceed in the following manner: 0.1 gram cœrulein sulphite[*] is dissolved in 10 c.c. water and at once worked up. 1 to 2 c.c. of this solution are mixed with 100 c.c. water and 8 drops ammonia, and the bromide of silver plates are bathed from three to four minutes and set up vertically to dry.[†] These solutions decompose very quickly, although the bathed plates keep for a longer time (time of observation two weeks), but they seem to act better in a fresh condition.

These cœrulein plates are sensitive to all rays of the spectrum from ultra-violet to above A (in red), and render sharp lines. Still it is paramount in the sensitiveness for blue, and is also very great for violet and ultra-violet, so that it is well in photographing the solar spectrum to place a dark yellow glass in front of the slit, or to insert a screen of chrysoidin. I apply an alcoholic chrysoidin solution (1 to 2,000), which is in a glass cell of 11 mm. thickness. With an exposure of 30 to 90 seconds (to four minutes) the Steinheil spectrograph (three prisms of flint glass) gives a distinct picture of the solar spectrum. From A to D the photographic action is about even; from D to E it rises to a stronger action. In blue there is, according to the concentration of the chrysoidin solution in the glass cell, a more or less wide minimum. Beginning from F or G the spectrum appears again extremely sharp with all its lines, and extends to beyond O into the ultra-violet. (See Curves I and II.)

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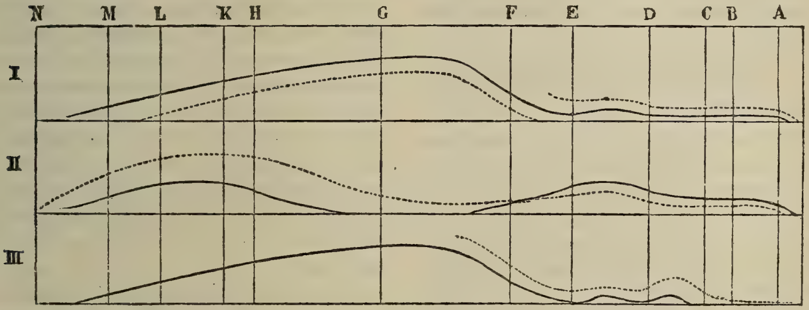
[*] "About the Behavior of the Haloid Compounds of Silver," etc. (Report of Imperial Academy of Sciences, Vienna, December 18, 1884. See BULLETIN, Vol. XVI.) "On the Action of Different Coloring Matters Upon the Behavior of Bromide of Silver in the Solar Spectrum." (Part I. Vienna, December 18, 1886.)

[*] Received from Dr. Schuchardt, of Gorlitz.

[†] I dry the plates in a completely dark, well-ventilated room, requiring from five to eight hours. For this test a sensitive kind of gelatine dry plate (18 to 23 degrees Warnerke sensitometer) should be used.

Pyro-potash or pyro-soda solution with a little bromide of potassium serves as developer.

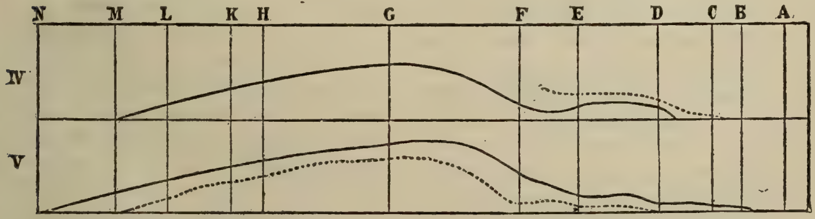
Fig. 1.



I. Picture of the solar spectrum upon bromide of silver gelatine colored with cœrulein.
II. The same with a chrysoidin screen in front of the slit.
III. Typical spectrum picture upon bromide of silver colored with diazoresorufin or bleu coupier.

If a red oxide of copper glass is placed in front of the slit of the spectrograph, the violet to the green is subdued very much, and the spectrum appears very distinctly from about the Fraunhofer line D to the red. Two lines appear even in infra-red (Z and X^2) with long exposure. But blue and violet light passes also through the ruby glass, which, though weakened by the glass, is not entirely absorbed. Such glasses can be used with success in photographing the spectrum red; but the chrysoidin screens, or other similar yellow coloring matters, admit generally a shorter exposure. Combined red copper and blue cobalt glasses can be used for the most extreme red.

Fig. 2.



IV. Spectrum pictures upon bromide of silver colored with Congo, benzopurpurin, naphthol red, etc.
V. Upon bromide of silver colored with certain indulins.

Congo, Benzopurpurin, Benzopurpurin 4B, Bordeaux Extra, Orange R, Rouge Suisse, and α Naphthol Red.*—These coloring matters are orange-red to violet-red; dissolve in water; do not mix with ammonia; and are good sensitizers of bromide of silver for green and yellow. They show a broad absorption band in blue to green, which is not sharply bound towards the red end, but the absorption band advances with increasing concentration of the coloring matter solution gradually towards orange, while at less concentration it ends in green.†

The light sensitiveness of the bromide of silver in the solar spectrum is increased by these coloring matters to a broad band in green to yellow or orange (E to beyond D). The sensitizing draws closely to the normal spectrum pictures upon bromide of silver; a sharply delineated maximum cannot be observed with such addition of coloring matter, but the action of light continues from E to D (or with benzopurpurin 4 B, Congo, and the more deep red colors, sometimes to above C). With increased addition of coloring matter the action in yellow-green separates from that in the blue part of the spectrum by a space of weaker sensitiveness; or the sensitiveness towards the rays from E to D is increased in a higher degree, as for rays from E to F. (See Curve IV., Fig. 2. The dotted curve represents the course of the spectrum picture with longer exposure.)

---

* Dr. Schultz, of Berlin, was kind enough to give me this coloring matter. Congo was the first coloring matter with which the benzidin was introduced to chemical industry. Since then this material forms with the homologue toluidin the base of quite a number of valuable coloring matters, which are remarkable in not requiring any mordants for fixing upon cotton, and are pretty fast colors.

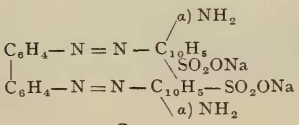
† The publication of my researches and experiments in regard to this I reserve for a future time.

The coloring matters are best applied as baths, with addition of ammonia for bromide of silver gelatine.*

Of particularly favorable action in my tests were the coloring matters mentioned by me: Benzopurpurin 4 B,† Congo, benzopurpurin, then orange R, orseilline, Bordeaux extra, rouge Suisse,‡ α naphthol red.

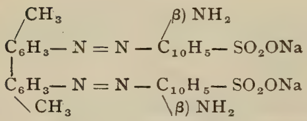
The coloring matters Congo, benzopurpurin, benzopurpurin 4 B, and Bordeaux extra are very similar in their chemical composition.

The three last mentioned coloring matters are from the factory of F. Beyer, of Elberfeld, and possess, according to communications from Messrs. König, Bötlinger and Matthis, the following composition:



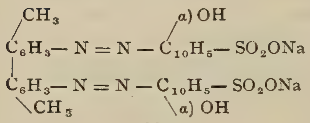
$$\begin{array}{l} \qquad\qquad\qquad\qquad /\alpha)\ NH_2 \\ C_6H_4-N=N-C_{10}H_5 \\ | \qquad\qquad\qquad\qquad \backslash SO_2ONa \\ C_6H_4-N=N-C_{10}H_5-SO_2ONa \\ \qquad\qquad\qquad\qquad \backslash\alpha)\ NH_2 \end{array}$$

Congo.



$$\begin{array}{l} /CH_3 \qquad\qquad\quad /\beta)\ NH_2 \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ | \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ \backslash CH_3 \qquad\qquad\quad \backslash\beta)\ NH_2 \end{array}$$

Benzopurpurin.



$$\begin{array}{l} /CH_3 \qquad\qquad\quad /\alpha)\ OH \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ | \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ \backslash CH_3 \qquad\qquad\quad \backslash\alpha)\ OH \end{array}$$

Azoblue.

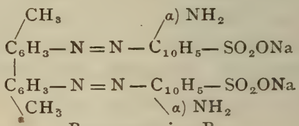
Benzopurpurin 4B is therefore the best homologue of Congo. While the latter is obtained by the action of tetrazodiphenyl upon α naphthylamin sulpho-acid, benzopurpurin originates from the action of tetrazoditolyl upon α naphthylamin sulpho-acid. Benzopurpurin is isomeric with the benzopurpurin 4 B which is obtained from tetrazoditolyl and β naphthylamin sulpho-acid. Among these benzopurpurin 4 B appears to me the most desirable sensitizer. The coloring matter possesses a stronger blue shade than Congo and sensitizes further towards orange (red). The α coloring matter acts a little more powerful than the β coloring matter. (About azoblue and benzoazurin see below.)

Bordeaux extra* acts weaker, also azoblue, † still weaker, benzoazurin.‡ (All these coloring matters I obtained from Elberfeld.) It seems therefore that the entering of the hydroxyl group in place of the amido group reduces the sensitizing action, this substitution also influencing the absorption power.

The entrance of methyl into the coloring matter makes the shade more blue; the sensitizing action will then also extend further towards red.

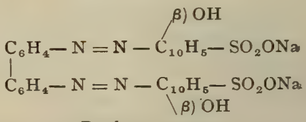
Of the two isomeric coloring matters of benzopurpurin, the one of α naphthylamin sulpho-acid shows a somewhat better sensitizing action than the one of β acid.

I also observed in other azo coloring matters belonging to the same homologous series that the preparations from α naphthol sensitize better than those from β naphthol.



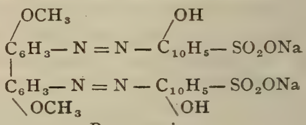
$$\begin{array}{l} /CH_3 \qquad\qquad\quad /\alpha)\ NH_2 \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ | \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ \backslash CH_3 \qquad\qquad\quad \backslash\alpha)\ NH_2 \end{array}$$

Benzopurpurin 4 B.



$$\begin{array}{l} \qquad\qquad\qquad\qquad /\beta)\ OH \\ C_6H_4-N=N-C_{10}H_5-SO_2ONa \\ | \\ C_6H_4-N=N-C_{10}H_5-SO_2ONa \\ \qquad\qquad\qquad\qquad \backslash\beta)\ OH \end{array}$$

Bordeaux extra.



$$\begin{array}{l} /OCH_3 \qquad\qquad /OH \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ | \\ C_6H_3-N=N-C_{10}H_5-SO_2ONa \\ \backslash OCH_3 \qquad\qquad \backslash OH \end{array}$$

Benzoazurin.

Thus orange R (Geizy) and acid orange (Geizy). The former is produced from diazobenzol sulpho-acid and α naphthol, and sensitizes the bromide of silver between E and D (similar to Congo, but weaker). The isomeric acid orange is produced from diazobenzol sulpho-acid with β naphthol, and sensitizes considerably weaker for green and yellow.

---

* 2 to 4 c.c. color solution (1 to 400), 100 c.c. water, and 1 to 2 c.c. ammonia.

† 2 c.c. color solution (1 to 400), 100 c.c. water, and ½ c.c. ammonia.

‡ From the aniline color factory of Mr. J. R. Geizy, of Basle.

* Produced from benzidin and β naphtholmonosulpho-acid.

† Produced from tetrazoditolyl and α naphthol sulpho-acid.

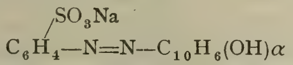
‡ Produced from tetrazodiphenyl ether and α naphthol sulpho-acid.

Two isomeric coloring matters furnish therefore the interesting observation that they behave distinctly different as sensitizers in the spectrograph, and less in a qualitative than quantitative way.

An orange-red coloring matter which differs from orange R by the absence of the sulpho-group, and which is produced from diazobenzol and α naphthol, shows likewise a distinct band of sensitizing between D and F in the solar spectrum. This coloring matter has the formula

$$C_6H_5{-}N{=}N{-}C_{10}H_6(OH)\alpha$$

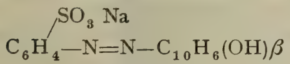
If this is compared with the formula (according to Dr. Walter) of orange R and acid orange, the results will be



$$\overset{/SO_3Na}{C_6H_4}{-}N{=}N{-}C_{10}H_6(OH)\alpha$$

Orange R.

Parazo-sulpho-benzol α naphthol.



$$\overset{/SO_3\,Na}{C_6H_4}{-}N{=}N{-}C_{10}H_6(OH)\beta$$

Acid orange.

Parazo-sulpho-benzol β naphthol.

Alongside of this we will consider a coloring matter which I will call α naphthol red. It is produced from α diazonaphthalin (by diazotizing of α naphthlin), and α naphthol combined. Its formula is

$$\alpha C_{10}H_7{-}N{=}N{-}C_{10}H_6(OH)\alpha$$

α Naphthol red.

(Oxyazonaphthalin.)

This coloring matter is also homologous with the above-mentioned coloring matter of diazobenzol. It is more violet-red and sensitizes the bromide of silver for green and yellow (at longer exposure beyond C). This naphthalin coloring-matter sensitizes further towards red than the benzol coloring matter, and the former acts also quantitatively, sensitizing better than the latter, but can show no particular advantages over Congo or benzopurpurin.

(*To be continued.*)

◆

THE ARGENTS.

FIRST FIELD MEETING.

THE first field meeting of this club took place Thursday, May 12th, and was a most successful and enjoyable trip.

The canal packet Excelsior had been chartered for the occasion, and the start was made at 9.15 A.M. from Georgetown.

Messrs. Crampton, Dodge, Fischer, Hansmann, Hine, Lee, Richards, Schneider, Smillie, Wales and White brought their cameras and took such views as pleased their fancy.

Great Falls was reached at a quarter before 1, and after partaking of a lunch the members shouldered their cameras and started to get instantaneous views of the Falls. The Falls were unusually high, and full of the "sacred soil" and the members availed themselves of the opportunity of catching the water on the keen jump.

At 3 P.M. the party started homeward, stopping for an hour at Cabin John's to take a few views of the bridge. The boat reached Georgetown at 7 P.M. The day was a most perfect one for photography, and the various locks, the boat, and party were fired at, without injury however, and at the next regular meeting the game will be shown by the successful sportsmen.

EDGAR RICHARDS,
Secretary.

◆

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, MAY 3, 1887.

President HENRY J. NEWTON in the chair.

The *Secretary* announced the usual journals contributed to the section, for which a vote of thanks was passed.

The Chairman of the Executive Committee reported that Mr. Ernest Edwards would be unable to furnish his part of the evening's entertainment as it was impossible for him to get ready the apparatus necessary to demonstrate his process and to supply as he intended the souvenir prints which he proposed presenting to each of his auditors. He had however, promised to entertain the section at its next regular meeting, the first Tuesday in June. The Chairman was happy to state that Dr. Charles Ehrmann had kindly consented to fill the gap by reading a paper entitled "Color-Sensitive Methods and How to Work Them, with Especial Reference to Erythrosin."

The *President* then introduced Dr. EHRMANN, who read his paper. [See page 302.]

At the conclusion of Dr. Ehrmann's paper Dr. O. G. MASON was introduced and gave his lecture, entitled "A Voyage to the Moon," illustrated by the stereopticon. [See page 303].

The Section then, on motion, adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED MEETING of the Society was held on Wednesday evening, May 4, 1887, with *Vice-President* BULLOCK in the chair.

The *Secretary* reported that Messrs. Wilson, Hood & Co. had presented copies of the *British Journal* Photographic Almanac and Year Book for 1887, and a resolution of thanks was passed for the donation.

Attention was called to the collection of photographs hung on the walls of the room from which the annual presentation pictures would be selected.

The Committee on Membership reported the election of the following active members: Messrs. Thomas Lynch Montgomery and Samuel D. Hopkins.

Mr. Browne announced the death of Mr. James E. McClees, an old Philadelphia photographer, who, though not a member of the society, he thought well deserved mention in the minutes at this time. Mr. McClees was one of the pioneers in the art in Philadelphia, and was well and most favorably known to the older members. Mr. Ellis and Mr. Bell also added tributes of respect to his memory, alluding to the freedom of access to his laboratory formerly enjoyed by amateurs, and the help he was always ready to give at a time when every new discovery was jealously guarded by most professional photographers.

The papers of the evening, by Mr. ROSENGARTEN on "Photographic Chemicals and their Technology," and by Mr. BARTLETT on "Photography by Gaslight," were read and listened to with interest. [For Mr. Bartlett's paper see page 307].

The *Secretary* showed a new model Prosch Duplex Shutter, the special features being a new form of release of great delicacy and certainty of action, and a revolving diaphragm which entirely did away with loose stops, making a combination of lens, stops and shutter with no loose parts liable to be lost or left behind. The rapidity of action of the shutter was also understood to have been increased.

Mr. COATES showed six lantern slides made from negatives of trotting horses by Mr. F. O. Tucker, of Hartford, Conn. They were remarkable for their sharpness and full detail, some of the horses going at a 2.15 gait.

Mr. TRASK showed a series of seventeen cabinet photographs of prominent Philadelphia clergymen, also three composite photographs made from the series. He stated that the question having been raised whether the first or the last impression on the composite negative produced the most striking effect in the resulting picture, he had made the first and second of the composites by exposing on the seventeen originals in reverse order, and the third indiscriminately, but no appreciable difference which could be attributed to this cause could be discovered in the result.

Mr. VAUX, alluding to statements which had been made in the *Philadelphia Photographer*, that the so-called photographs of lightning flashes are in reality only pictures of the illuminated edges of clouds, showed a series of pictures he had made of sparks from an electrical machine. From one to twenty sparks were included in each negative, and their form was so precisely similar to those of lightning flashes, that there could be no question that lightning pictures were what they claimed to be.

Mr. WALMSLEY showed one of Horsman's Eclipse Outfits which were sold for the low price of $2, including all apparatus and chemicals necessary to produce photographs. He also showed some blue prints made upon postal cards which were prepared and sold ready sensitized for the purpose.

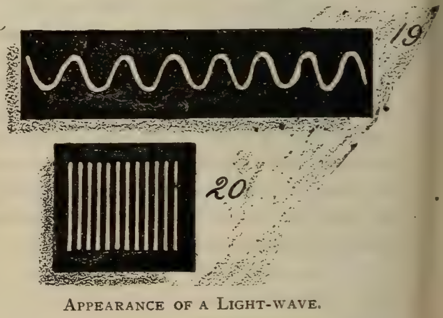
Adjourned. ROBERT S. REDFIELD,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING MARCH 8, 1887.

(*Continued.*)

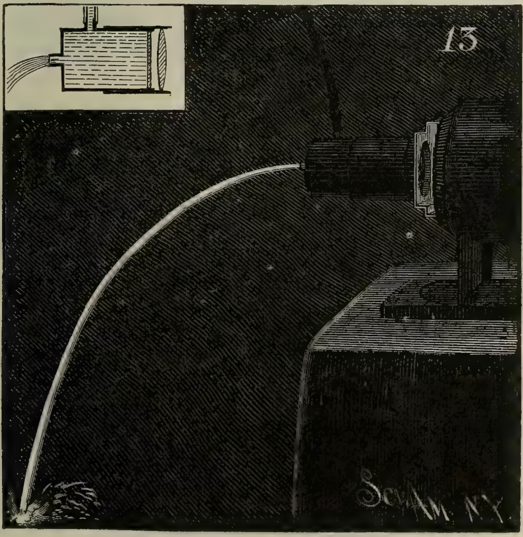
BY means of two mechanical slides the different theories of light—the corpuscular and wave theories—were very plainly illustrated.



APPEARANCE OF A LIGHT-WAVE.

The wave theory, Mr. Hopkins explained, was now the most commonly accepted, the particles of light ether moving transversely to the direction of the ray of light, but never progressing forward as in a sound wave.

The movement of a sound wave was then very vividly shown by a third mechanical slide. By a very simple experiment the intensity of light was shown. Three different squares of whitened card-board were made. One corresponded to the size of the square projected on the screen. This was held up to show the intensity of the light at that point. A second square, one-fourth of the size of the first, was then held up half way between the lantern and the screen. It just eclipsed the image on the screen and the light appeared four times brighter. A third square was exactly one-sixteenth the size of the original, and on being held up at a point one-fourth of the distance between the lens and screen, reflected back the light sixteen times as strong as if held at the screen. The experiment clearly demonstrated the well-known law that the intensity of light varies according to the square of the distance.



Luminous Fountain.

Next the refraction of light was shown very clearly by diagrams; how the under side of an oblique beam of light striking the refracting medium is first retarded and bent slightly out of its course, continuing in a straight line, and emerging from the other side of the medium, thereupon taking its normal direction again.

The refraction of a diagram of an arrow was shown. By placing a strip of glass in front of the lens and moving up or down, a portion of the arrow on the screen was refracted or bent.

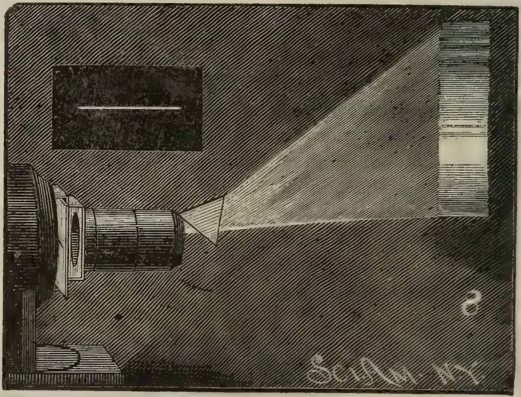
A slide representing a marble bust was then inserted and a cylindrical lens put on the front of the lantern; rotating the lens produced a very curious distortion on the screen, reminding many of the peculiar distortion effects sometimes observed in taking portraits with wide angle lenses.

The persistence of vision was next illustrated by rotating a paper disk about two feet in diameter in front of the lantern, and then letting flashes of light strike it. The assistant rotated the disk rather rapidly while Mr. Hopkins let off a new duplex Prosch shutter at fast speed, flashing the light on the disk. It was not sufficiently quick to give the disk the appearance of standing still, but instead the latter appeared as if moving very slowly, showing that the shutter worked fast. In place of the shutter a rotating disk, with apertures ranged in a circle at certain intervals, was fixed. In rapidly revolving this on the lantern, the flashes of light were so rapid as to give the colored disk the appearance of standing still. To produce the effect at a single flash would require in Mr. Hopkins' opinion, a flash as quick as lightning.

Newton's disk was next shown, having on its surface the complementary colors in equal proportion. This was revolved rapidly, resulting in blending all the colors to the eye, converting them into grayish-white.

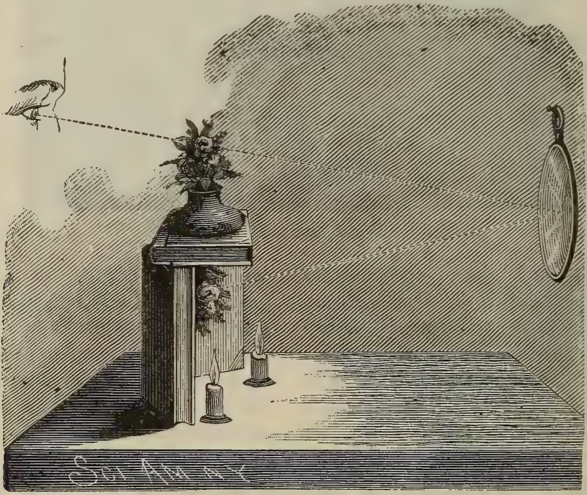
For the colored paper disk a Geissler tube about twenty inches long was substituted; when rotated rapidly the flashes of electricity appeared to the retina of the eye like a beautiful blue electrical star; the experiment was repeated two or three times.

The retention of the image on the retina of the eye was also shown by another electrical experiment; a board three and a half feet long, by perhaps six inches wide, covered with tinfoil, having small squares cut in it about half an inch wide, was hung up on the side of the room and connected to the induction coil. The current, as it flashed over the surface of the board, appeared precisely like several streaks of lighning, while in reality there was but one flash at a time. The effect was quite remarkable, producing the appearance of an electrical storm.



Projecting the Spectrum.

A novel lantern slide of a dancing skeleton rapidly changing to different positions was very laughable to look at, and was another example of the persistence of vision.



Phantom Bouquet.

Arranged on one side of the room was the society's lantern having fixed in front an attachment for showing the total reflection of light in a stream of water. A parallel beam of light was projected through the vessel holding the water; when the valve was opened a luminous stream of water falling in a natural curve to a pail on the floor, resulted. The light was entirely refracted by the water. Inserting blue, green and red glasses in front of the condenser, changed the color of the luminous stream accordingly, producing, as a result, some very beautiful effects.

After this experiment, refraction of light by a bisulphide of carbon prism was shown, the light being dispersed to form the spectrum. By means of a second prism the spectrum was reconverted into white light again.

The polarization of light was very easily and successfully explained by special diagrams thrown on the screen, followed by examples of tourmaline (the well known polarizing substance), thin strips of which, when crossed at right angles, appeared perfectly black.

The muslin screen was then taken down and the society's paper screen lowered in its place, while at the same time the lantern was moved into the library room, and the attachment for showing microscopic objects with the polariscope was put on. During the interval Mr. Beach showed the "Phantom Bouquet," consisting of a bouquet of artificial flowers inverted, suspended from a board illuminated in front by two candles. On top of the vertical board was a small empty vase, and two feet in front of the bouquet was hung on another vertical board a concave mirror. When the observer stood off a certain distance directly in front of the mirror, the bouquet had the appearance of standing full, round and beautiful in the vase. The engraving shows the arrangement quite clearly. (*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—H. B. writes: An acquaintance of mine wants me to ask you a few questions to be answered in the BULLETIN. 1st. Is the last object looked at by a person dying revealed in the eye of the deceased, and if so could it be photographed; and is there any camera and lens made for that kind of work? 2d. Is the "Ready Fotografer," mentioned in the advertising pages of the BULLETIN, good for anything, or just for amusement? 3d. What will remove pyro and soda stains from the fingers?

A.—The idea that the eye of a dead person retains the image of the last object looked at comes from some misunderstood experiments of Boll and Kuhne, of Germany, who found that the retina of the eye contains a coloring matter that is bleached by light. This material is purple, and received the name of "visual purple," although there is no proof that it has anything to do with vision. It is a fact that images are retained upon this purple pigment of the retina some hours after death; but the fact that light acts upon the same substance and bleaches it in a short time, renders it impossible to retain the image long enough to photograph it. In regard to the "Ready Fotografer," all we can say is that some very good pictures can be taken with the little pin-hole camera mentioned, but they lack sharpness. Pyrogallol stains may be removed from the fingers by dipping them into strong muriatic acid, and then washing thoroughly in water.

Q.—S. W. S. writes: Can you tell me if there is a process for making ferro-prussiate prints with blue lines on white ground direct from tracings? I believe there is, but I have not been able to find it. If you cannot give me such a formula, please give the quickest printing formula for making such prints from negatives, and oblige.

A.—There is a process for obtaining ferroprussiate prints with blue lines on a white ground, but it is very troublesome and unsatisfactory. It was tried by one of our large engineering works here and abandoned, after a very patient trial, in favor of the regular process, white lines on a blue ground. A good formula for the ordinary process is as follows:

No. 1.

Ferricyanide (red prussiate) of potassium...	539 grains.
Distilled water........	8 ounces.

No. 2.

Citrate of ammonia and iron	816 grains.
Distilled water........	8 ounces.

When ready, mix equal parts of Nos. 1 and 2 and apply to the surface of the paper with a sponge or soft cloth and allow to dry. These operations must be conducted in the dark room. Print in direct sunlight and develop in water containing enough muriatic acid to make it taste just sour. Wash thoroughly in clean water. It is less trouble to buy the paper ready prepared.

Q.—P. A. S. writes: Sometimes in pictures taken outdoors there appears on the middle of the negative a circular dark cloud of a diameter about two to three times that of the lens, not dark enough however to spoil it altogether, yet showing correspondingly lighter on the print. Please to inform me, through BULLETIN, of the cause of this defect.

A.—The dark spot on your negative is evidently a "ghost" as it is called, and is due to the sunlight striking the front of your lens, or to the diaphragm being in the wrong position in the lens tube. If the ghost is not caused by sunlight striking the front of lens, try moving the diaphragm.

Q.—E. G. H. writes: Would you please answer the following question in the BULLETIN. By what characteristics, as regards physical appearances, development, and fixing, can you tell if a dry plate contains iodide?

A.—Plates containing iodide of silver are more yellow than pure bromide plates, owing to the yellow color of silver iodide; but it is difficult to distinguish plates that only contain a very small quantity of iodide. Plates containing much iodide fix much more slowly than bromide plates.

Q.—A. W. B. writes: Will some of the staff of the BULLETIN tell me through its columns how lantern slides are colored, and what kind of material is used in coloring them?

A.—It is of course essential that the colors should be transparent, that the light may pass through them. Furthermore, it is particularly desirable that the colors should be applied by some one that has an artistic eye and touch. There are several good sets of colors used for the purpose, one of the best being those supplied by our publishers.

Views Caught with the Drop Shutter.

THE perforating of stamp photos has been abandoned, as the majority prefer a smooth edge, and have been trimming off the perforations before using; besides the perforating destroys the gum around the edge, causing them to curl up after being pasted. They are now cut apart with scissors or a knife and give much better satisfaction. Genelli, the inventor and patentee, to whom patents were issued December 29, 1885, and July 29, 1886, is now making them for photographers at 50 cents per hundred.

WE would call the attention of our readers to the various letters and notices in our advertising columns relating to the gelatino-bromide paper of our publishers. It appears to us that these are extremely important to all interested.

WE are indebted to J. G. RAMSEY & Co., of Toronto, for the following cutting from the Toronto *Mail*, in regard to the industrial exhibition there: "The Committee of the Arts Department of the Industrial Exhibition Association met yesterday afternoon, Mr. W. S. Lee in the chair, for the purpose of making a final revision of the prize list of their section. A deputation from the photographic section of the Canadian Institute waited upon the committee and urged them to offer prizes for photographs by amateurs. It was finally decided to offer four silver medals and four bronze medals, open to competition by the amateurs of the province, for landscapes, portraits, bromide prints and interiors."

THE NEW ORLEANS CAMERA CLUB held an exhibition and sciopticon display of work at Tulane Hall, New Orleans, on May 17th. We are indebted to the Secretary, Mr. W. W. Crane, for an invitation, for which we tender our best thanks.

WE regret to note the following announcement in the *Indianapolis News*, May 4th. "Elmer H. Clark, son of D. R. Clark, of this city, and a leading photographer of Lafayette, was compelled by declining health a few weeks since to close his business and go to New Mexico in hope of receiving benefit. His father received the sad news of his death yesterday." We tender his family our sincere sympathy in their bereavement.

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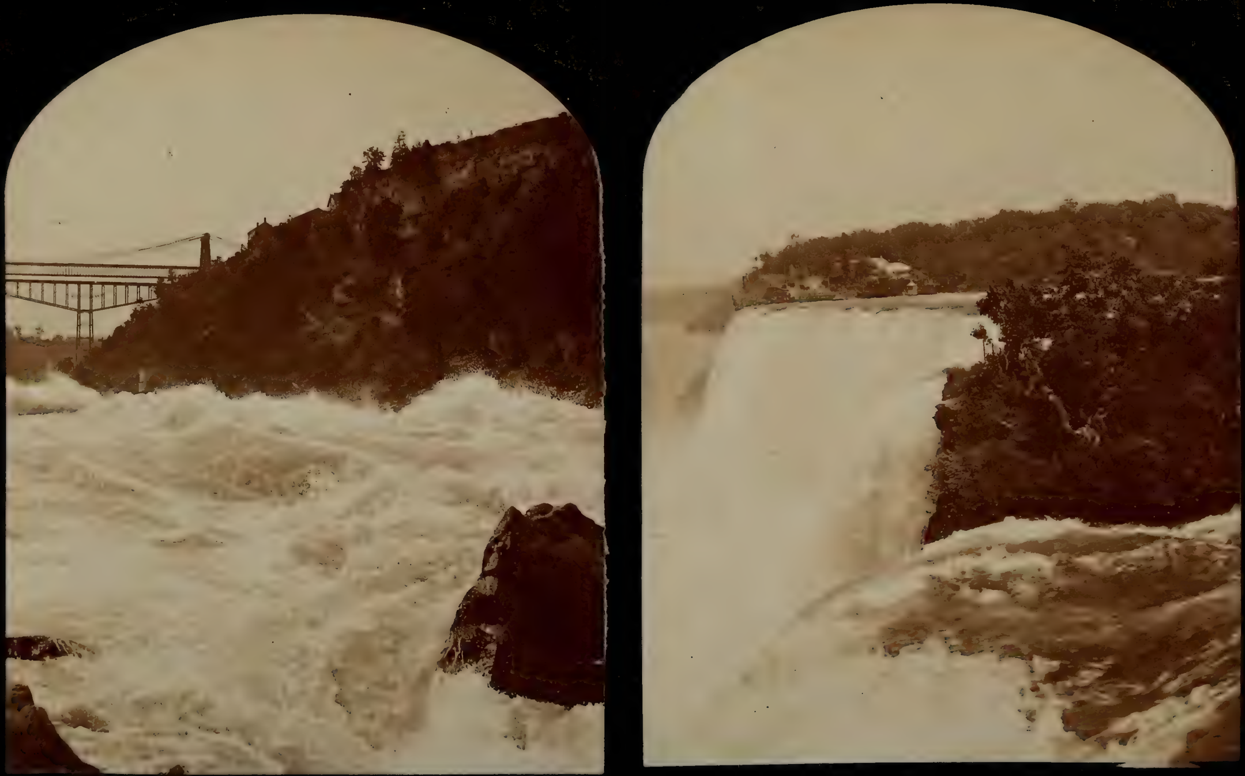
EVENING POST JOB PRINT, N. Y.



NEGATIVE ON
STANLEY PLATE
WITH
[illegible]MEYER [illegible]

A Glimpse of Niagara

PRINTED ON
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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JUNE 11, 1887. Vol. XVIII.—No. 11.

URANIUM SALTS IN PHOTOGRAPHY.

As there is an increasing interest in the use of uranium salts for photographic processes, it may not be unprofitable to review the properties of this interesting metal and its compounds.

In the year 1789, the German chemist Klaproth undertook the examination of a massive, black, resinous-looking mineral which is found at Joachimsthal, and discovered in it the evidences of a new metal, which was afterwards isolated by Peligot. This new metal was found in a mineral called pitchblende, which occurs in only a few places and not in any abundance. In addition to the locality above mentioned, it is found at Redruth in Cornwall, England, and in several places in Germany. The metal it contains received its name in honor of Sir John Herschel's discovery of the planet Uranus in the year 1781, and was called uranium. As a metal it is of little interest; it is white and malleable, and seldom seen except in chemical museums. But it forms two classes of salts that give it a character similar to iron in its relation to photographic manipulations. The mineral pitchblende mentioned above consists of a combination of two uranium oxides (UO_2, $2\,UO_3$), with compounds of lead, iron, bismuth and other metals as impurities; the combined uranium oxides varying from forty to ninety per cent. By treating this mineral with nitric acid uranic nitrate is obtained, and by repeated purification and crystallization greenish-yellow crystals of the pure $UO_2(NO_3)_2+6\,H_2O$ are the final product.

The salt is in the form of highly fluorescent rhombic prisms, which are soluble in half their weight of water, and are the basis of the applications of uranium to photographic processes. The action of light upon uranium salts is almost the same as in the case of iron. Ferric salts in the presence of certain organic matters, when submitted to the action of sunlight, are reduced to ferrous salts. In like manner uranic salts under the same conditions in regard to organic substances are reduced to uranous salts. Uranic salts are greenish-yellow; uranous salts emerald green. Sir John Herschel was the first to experiment with the iron salts in photography, and Niepce de St. Victor discovered the photographic properties of the uranic compounds. If we coat paper with a mixture consisting of a solution of uranic nitrate and some organic matter, like gum arabic, and expose it to sunlight, we shall find that by flowing the paper thus exposed with a solution of ferricyanide of potassium a chocolate-brown color is obtained; while

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paper that has been similarly coated, but not exposed to sunlight, undergoes no such change. The action of the sunlight has caused a reduction of the uranic salt to the uranous state, which latter gives a chocolate-brown compound with ferricyanide of potassium. The application of this to photographic processes can be readily understood. The only drawback is that the uranic salts are not very sensitive and the exposures to sunlight have to be quite long. Nevertheless, modifications of the principle are applicable in some cases and useful results are obtained, and it appears to us that with further study this metal uranium might receive some important applications in photographic manipulations.

Mr. T. C. Roche has recently been experimenting with uranic salts and gives us some of the details. Quite a number of years ago he made for us some uranium prints which to-day are as beautiful as on the day they were produced, and we thought we should like some more of the same examples of photographic printing. Mr. Roche very kindly consented to make the prints for us, and gives us the following as his *modus operandi.*

Float good Saxe plain paper for two minutes on a solution of

Uranic nitrate	500 grains.
Water	10 ounces.

and allow it to dry. When dry place it in contact with a negative in a printing frame and expose to sunlight. For line work the exposure should be about ten minutes; but for half-tone pictures as much as forty-five to sixty minutes are necessary, according to the density of the negative. After exposure the proof should be washed in two or three changes of clear water and drained. It is then flowed with a solution of ferricyanide of potassium (red prussiate of potassium) containing ten grains of the salt in three ounces of water. This will immediately reveal or develop the picture, and the solution of ferricyanide should be kept on the proof long enough to bring out all the detail. The developing solution is not much exhausted by the work it has to do, and consequently can be used repeatedly, although it cannot be kept many days without decomposing. After the desired detail and density is obtained in the picture, wash it with several changes of water, and clear with a solution containing

Pure hydrochloric acid	2 drams.
Water	10 ounces.

This will clear up the white parts of the picture, and after several more washings in clean water the print is allowed to dry. The picture thus obtained is of a pleasing brown color, and for many subjects gives a very artistic result in monochrome.

While working with the above process Mr. Roche thought he would try a modification of the process applicable to his gelatino-bromide paper, and thus give a light or dark brown tone to pictures made by this interesting method of photographic printing. The changes in manipulation are very slight, and the results very encouraging.

First soak the gelatino-bromide proof in clean water for a few minutes. Drain off the water and flow with a solution containing

Uranic nitrate	50 grains.
Water	5 ounces.

Work the solution over the proof for some time (one to two minutes), and pour off the fluid for future use. Now wash the proof on both sides and allow to drain. After draining flow over a solution of ferricyanide of potassium containing ten grains of the salt in one ounce of water, and work the print to obtain the desired brown tone. In both cases, that of the uranic solution and also the ferricyanide, the time under the action of the solutions will determine the tone of the pictures ultimately obtained. Finally, clear up the white portions of the picture with the weak hydrochloric acid bath given above.

EDITORIAL NOTES.

THERE is now in the Walker Art Gallery, in Liverpool, England, an unique collection of photographs. These are photographic reproductions of the works of Raphael, collected and arranged chronologically by Mr. W. M. Conway. From one to two thousand photographs are purchasable which are ascribed to Raphael, but when carefully scrutinized they are reduced to about five hundred photographic reproductions of the artist's genuine works. Those of our readers who pass through Liverpool this summer on their European trips should not fail to see the above collection, as we understand it is very perfect, and carefully catalogued and arranged.

THE CZAR OF RUSSIA is reported to have a collection of photographs of all the persons who have been tried for conspiracy to take his life. It has been suggested that this collection should be submitted to the process for obtaining composite pictures and an average face be produced; this would serve as a study for Russian statesmen in the government of the discontents of their country.

PRESIDENT CLEVELAND has just ratified the agreement of the International Convention, securing to patentees in the United States the right to take out patents in other countries within seven months after the issue of letters patent in the United States. Hitherto the patents had to be applied for in Europe at the same time as in this country.

DR. EDWARD L. WILSON, of the *Philadelphia Photographer*, tells us that he will have ready about June 18th, a new book on photography after the plan of "Photographics" and called "Wilson's Quarter Century in Photography." The selection of the matter has occupied much of his time during the past two years, and judging from the prospectus before us, the work will be a thoroughly practical one, and useful to every progressive photographer. The volume will contain about five hundred pages, with nearly as many illustrations, many of the latter being devoted to the art side of photography. It is impossible to tell of all the good things Dr. Wilson promises to give us, but we shall give our readers a complete review of the volume as soon as we get it.

WE regret to note the death of Major Russell, of England, on the 16th of May. He was the investigator of the tannin and other preservative processes in early dry plate photography, and discovered the influence of bromide of potassium in controlling alkaline development. He is credited with the discovery of alkaline development; but this is a mistake. He early appreciated its value; but the idea emanated from Mr. Borda, of Philadelphia, and its practical attainment was the work of the late H. T. Anthony. In fact Messrs. Borda and Anthony were the discoverers of alkaline development; while Major Russell discovered the influence of bromide.

THE fourth annual excursion of the Photographic Section of the Cincinnati Society of Natural History took place on Decoration Day, and consisted of a trip to Lockland, twelve miles north of Cincinnati, upon the steamer Masonic. Messrs. Sheen & Simpkinson offered a prize of an Anthony Climax Detective Camera for the best three pictures, irrespective of size, made on the excursion. We have not yet heard who was the successful individual. The officers of the society for the current year are D. W. Huntington, *President;* E. B. Johnston, *Vice-President;* C. L. Garrison, *Secretary;* T. H. Kelley, *Treasurer;* A. I. Carson, *Librarian.*

MANUFACTURERS of albumenized paper need not be discouraged as to the supply of albumen. We note that a process has been devised for obtaining this desirable coating material from slugs and snails.

DURING a lecture before the Balloon Society of London, Mr. J. Traill Taylor stated that astigmatism, or the inability to see vertical and horizontal lines with equal distinctness, could be temporarily induced by tobacco, the eye resuming its normal functions in about an hour after the pipe had been laid aside. Dr. Lindsay Johnson afterwards corroborated the statement as to the influence of tobacco on the sight, by giving an instance of color-blindness produced by the same agency.

AN amateur photographic club has been organized in Montgomery, Alabama. Mr. Charles E. Wallin, the photographer, being much interested in the new organization, offers them every assistance. This is as it should be, amateurs and professionals should work together for mutual good. We mean true amateurs, not those who are half-way so.

IN this issue of the BULLETIN we give an exceedingly interesting article by Mr. George G. Rockwood, the well-known New York photographer, on "Composite Photographs," which contains many instructive suggestions in this line of photographic manipulation. We strongly recommend all interested in the subject to read it carefully.

[*From our Special Correspondent.*]

ENGLISH NOTES.

FIRST, I want to tell you of a dodge that I have lately found very useful in intensifying. Many negatives that require intensification still have certain parts already of sufficient density, and when carried out in the usual way these parts become too dense, and the remedy is found to be as bad as the disease. It is an excellent plan to first paint over such portions with a little thick sperm oil, using a fine brush. The oil does not spread, and the parts covered by it are quite unaffected during the intensifying process. After intensification is complete a little methylated spirit will readily remove the oil.*

The Astronomical Congress just concluded at Paris has proved a success. I wish we may some day get a similar International Congress of Photographers.

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* This is the method used by Mr. H. J. Newton, the President of the Photographic Section of the American Institute, and was published in the BULLETIN some time ago.—EDS.

The States were represented by Professor Peter (of Clinton), Winterhalter (Washington), and Elkin, the total number of photo-astronomers present being fifty-six. The object of the Congress was of course to agree on some scheme by which astronomical observatories in all countries would join in the work of photographing the heavens, so that the task might be done as speedily, well, and economically as possible. It was resolved to use refracting telescopes of about thirteen inches aperture and eleven feet in length, and to photograph all stars down to the fourteenth magnitude. The cost of the necessary equipment for each observatory was estimated at fifty thousand dollars, and it was shown that about ten thousand plates would be required for each complete picture of the sidereal sphere. The Congress recommended that the plates should be made from one formula, so as to be equal in sensitiveness, so that being the case, some plate maker will have a good time of it. It is to be hoped that in this great work our friends the astronomers will not disdain to seek advice from competent practical photographers, for there are many pitfalls in the way. For example, it is quite certain that it is not enough to manufacture plates by a given formula to insure their being of equal sensitiveness.

Have you ever tried gelatine emulsion films on card-board? I have lately been working with some made by Pumphrey, of Birmingham, and find them very good. The card seems to be varnished or gelatinized, and then coated first with a layer of collodion and then with the emulsion, and dried. The cards (which are very light) fit into the dark slides just like glass plates. After exposure the film is stripped without the least difficulty. It is developed and fixed in the ordinary way, and then laid down to dry upon a piece of card-board covered with flour paste. When dry it is brushed over with cold spirit varnish (while still on the card-board), allowed to dry, and finally stripped off, when it forms a beautifully light and transparent film, well deserving the name of "flexible glass" given it by the maker.

With paper or film negatives transport by post is a matter of no difficulty. Societies are springing up here for the circulation of such negatives, each member taking prints from such as he desires, and contributing fresh ones to the parcel before he dispatches it to the next member on the list,

One of our chief publishing firms is bringing out an important series of volumes on our "Sports and Pastimes," and last week I accompanied a skilled operator to the ground where an important foot-ball match was to be decided, in order to secure some instantaneous pictures of the principal episodes of the game. We had made some half-dozen exposures, which have since turned out fairly well, when a well-directed shot propelled the leather sphere in our direction with such velocity that it sent the camera over before we had time to interpose. The spectators did not laugh at us, of course! I mean to patent a sort of mantelet or camera-protector for such occasions before I go again.

From all accounts of the preparations, the Second Annual Photographic Convention, to be held at Glasgow in July, will be a very successful affair. I shall go as the special correspondent of the BULLETIN, and its readers may rely on getting my impressions at the earliest possible moment.

Why is it that English photographers never, or "hardly ever," fume their sensitized paper with ammonia, while I understand it is an all but universal practice in the States? The greater warmth and dryness of your climate may account for it, but I only mention the matter here to say that I recently succeeded, by fuming for half an hour, in getting satisfactory prints from some old ready sensitized paper which had been condemned by a friend as useless. It is probable that citric acid in some form or other is used in the preparation of most ready sensitized paper. This certainly retards toning, sometimes rendering it impossible, so that the good effect of the ammonia fumes may be mainly due to its neutralizing any acid condition which may be present.

The possible use of ammonia as a fixing agent for prints was mentioned in 1851 by Robert Hunt, and it has lately been again brought forward for that purpose by a Scottish vetern, R. H. Bow. It is quite true that a five per cent. solution of ammonia will fix a print in ten minutes; but the fumes will be found unpleasant, and the half-tones of the picture will certainly suffer. It might be worth trying such a solution, or a still stronger one in the case of over-printed proofs, as it would act as a reducer. In any case it will be found that prints fixed with ammonia require longer to tone, and a toning bath richer in gold than when hypo is employed.

Stripping films seem to be gaining rapidly in favor here, principally with amateurs, but there is some difficulty in getting a supply of the material. I am glad to note this fact, for it shows that the race of scientific photographers is increasing, that more and more are willing to take trouble if the result be worthy of it. I often wonder what the workers of, say 1855, would think of the processes of to-day. I believe many of them would declare our photography to be hardly worth while practicing, "there is so little trouble in it!" As far as the mechanical portion of our art is considered, I should be disposed partly to agree with them, and with the author of a book on photography recently published on your side of the Atlantic, who took for his motto, "Easy as falling off a log!" But fortunately there is an artistic side to the subject, and this opens boundless possibilities and difficulties. Our friend's motto had therefore better be read, "To take a bad photograph is as easy," etc. Of the making of such photographs there is no end, but the task offers no attractions to

TALBOT ARCHER.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Preparation of Arrowroot Paper for Platinum Printing—The Expenses and Advantages of Platinum Printing—Instantaneous Photography with the Magnesium Light.

In my last letter I wrote to you about the durability of platinum pictures. My son continued his experiments in this direction, and has demonstrated that if gelatine is entirely avoided in the preparation of the platinum paper, the pictures leave nothing to be desired in regard to durability. He now uses exclusively arrowroot for the preparation of his paper. The pictures made on such paper have, above all, the advantage of a warmer tone. Pizzighelli has already given a formula for the preparation of arrowroot paper for platinum printing. Ten grains arrowroot are ground in a dish with a little water, and then this is poured into 800 c.c. of boiling water under gradual stirring. After a few minutes boiling the solution is taken from the fire and 200 c.c. alcohol are added. The paper is bathed for about two minutes in the filtered solution, hung up to dry, bathed again, and then dried, with the former top side downwards (to obtain a uniformly thick film). But this method has its defects.

For the preparation of a large sheet there are needed at least two liters of solution for filling the tray, one of which size might not be at everybody's disposal. If the solution is not kept very warm also, a peculiar flaky precipitate will separate on account of the alcohol, adhere to the paper, and in the development produce numerous dark spots. Besides this, the paper will easily roll up in the hot potassium oxalate solution, which is a great obstruction in the manipulation of large pictures. My son, therefore, tried the following method, which is more certain and cheaper.

Tack the sheet to be prepared to a flat board on the table, and spread the mixture, as above described, but *without alcohol*, evenly with a soft bristle brush. As soon as the moisture has disappeared from the surface, the sheet is hung up on clips to dry. This is followed by the preparation of the platinc-iron oxalate in the usual well known manner. The paper prepared in this way rolls up very little during developing, and the pictures produced are not colored yellow by sulphureted hydrogen even in a moist state. The heavy, rough Steinbach paper is used, obtaining its gloss afterwards in the burnisher. Smooth paper makes an even distribution of the sensitizing solution difficult.

As the opinion is frequently expressed, that platinum paper would print too weak, and that strong negatives are required, it may be mentioned—as also already published by Pizzighelli—that the brilliancy of the pictures can easily be increased by adding more chlorate of potassium to the sensitizing liquid. The sensitiveness will of course diminish.

To get the most practical information about the prices of the platinum pictures, I have ordered a large number of 9 x 12 cut size for my journal, the *Photographische Mittheilungen*, at a cost of 1 mark (25 cents) per sheet. Forty pictures of the above size can be cut from one sheet. The price of one thousand pictures would therefore be 25 marks=6 dollars. To this has to be added 20 per cent. for waste. The cost of material for a thousand pictures is therefore $7.25. For this price I cannot obtain even lichtdruck pictures, setting aside silver prints entirely. I believe, therefore, the platinum process is not only a handsome and durable one, but cheap as well. There is also the sensitiveness, enabling one to work just as quick as in carbon printing, so that three times as many pictures can be printed in the same time as silver prints.

I have written to you already repeatedly about magnesium wire. The latest and most interesting results in this field are instanteous views. It has been repeatedly attempted to mix magnesium powder with explosive salts, such as nitrate or chlorate of potassium, to produce a chemically effective quickly burning light, so far with no other result but mere experiments. Messrs. Gädicke and Miethe, of this city, have now brought the matter into a system, and the results are actually astonishing. They have produced a magnesium mixture which burns in $\frac{1}{40}$ of a second and gives such an intense light that completely exposed instantaneous pictures can be obtained in that time. Gädicke and Miethe have made large groups of an evening party, ladies and gentlemen in standing and sitting position, with surprising sharpness. Thus a new era commences for instantaneous photography at night; and this is not only of importance for groups and portraits, but also for architectural and interior views. In this manner I took a view of a hall, 40 feet long, at 12 o'clock midnight with success. The most remarkable fact is, that though people move involuntarily at the flash of light, the picture has already been taken when this happens, and so a completely sharp picture is obtained. The inventors have already taken out patents in all countries, and I am fully convinced that this invention will be of importance in every branch of photography.

We require more laborers in the photographic field, having met with a heavy loss lately. The renowned chemist, Obernetter, died on the 13th of April at Munich in the prime of his life, only 47 years old, of heart disease. His name first became public through a new copying process, with copper, iron and cyanide salts, in the year 1862, and then he invented a new method for the production of burnt-in pictures upon porcelain, produced with the aid of the dusting-on process, in which he possessed quite a dexterity. Obernetter was one of the fortunates, succeeding in whatever he undertook. His dusting-on process soon passed into other hands under the name of photoceramic, and is practiced at the present day by Dr. Oidtmann, of Linnich. Obernetter worked it out for the reproduction of negatives, which later on was of the highest importance to him for his lichtdruck researches. His process obtained a prize from the Vienna Photographic Society. An important discovery which he made in the meantime was the collodion paper, of which the first sample was published in my journal in 1868. This still remains unchanged. The inventor even here had the satisfaction of seeing his process, after decades, brought to light again by others under the name of aristotypie, and offered as someting entirely new, although he obtained only a passing and partial success with it.

Particular attention was paid by Obernetter to the lichtdruck process. He entered this field later than Albert or Husnik, but quickly recognized its defects; that is the particular method of securing the film to the glass. Albert's process consisted in the application of a preparation of chrome gelatine, which was exposed from the back. This was effective, but attended with loss of time. Obernetter introduced instead a preparation with isinglass, and this is now generally used. That he surpassed in technical execution is well known. His lichtdruck process was patented about 1878 in America, under the name of the artotype process. His collodion paper has also been used a good deal in the United States. He followed with great interest the development of all negative processes. In 1878 he published his reversed collodio-negative process, in which silvered collodion is sensitized in solutions of iodide or bromide of potassium.

Doubtless the silvered collodion caused him to try silvered gelatine, this leading him to his later emulsion process. In 1882 he made known his new emulsion process, proving in a surpassing manner the originality of his intellect. Other photographers were not so fortunate in succeeding with this process as the inventor.

But the modern mechanical processes by lithography, especially the copper lichtdruck, captivated his untiring inventive genius. Goupil, of Paris, had monopolized for years the photo-engraving process by the galvano-plastic way. Then came Klie, of Vienna, with his new etching process by pigment printing. Obernetter struck a new path. He created a process by which a substituted gelatine negative changed in chloride of silver, will etch itself into copper. The wonderful results of this process have been sufficiently described in the journals and publicly recognized to need more than a passing notice. It surpasses in cheapness and rapidity all others, without diminishing the beauty of the results in the least. Since this invention Germany has been emancipated from France in photo-engraving.

In consideration of his eminent services in the progress of photography, the Society for Förderung der Photographie elected him last year an honorary member. His last joint invention with me is the production of orthochromatic gelatine plates requiring no yellow glass or screen. Obernetter's death is a heavy loss to the entire photographic world.

BERLIN, May, 1887.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued.*)

NEGATIVES.

THE negatives which should be employed ought to be of good density and must be provided with a so-called "safe edge," *i. e.*, some opaque yellow or black paper strips pasted around the borders. These strips ought to be from one-eighth to one-fourth of an inch wide. This is a necessity, for if there were not a safe edge many a good print might be spoiled by a little carelessness, when withdrawing the tissue paper from the transfer medium.

For double transfer the negatives as generally taken are all right, for the picture will show right, *i. e.*, the objects which are on the right side will come in the picture on the right side also; but for the single transfer the negatives must be reversed, for this process gives pictures where the right side objects are shown on the left side. This is due to a peculiarity of the carbon process—the prints must be developed from the back. As it also reproduces in the most absolute way any shades or gradations of the negative, it is necessary when printing from thin negatives that they are covered on the glass side either by mineral paper or matt varnish. The latter is preferable, as it admits that parts which should print strong can be cleared up or scraped off. A very good formula to make the varnish is as follows:

Gum sandarac (finely powdered)	4 parts.
Ether	36 "

When dissolved add

Canada balsam	1 part.
Benzole	20 to 30 parts.

Filter.

The greater or smaller quantity of benzole produces a coarser or finer grain. This varnish is employed on the back of the negative, which however should not be warmed. If more density is wanted a second covering with the varnish may be given. The retouching can be done with the pencil, graphite and stump, also with brush and colors, and parts which should print well may be lightened up by means of a brush dipped in mastic varnish. Larger negatives may be covered with mineral paper which was first soaked in water and blotted off. The borders only must be gummed and the whole sheet drawn as tight as possible over the plate. The retouching, by means of stump and pencil, should be done on the paper when dry. Strong negatives do not require this, but thin negatives will be much improved by it. The single transfer process requires reversed negatives, which may be made either direct in the camera, placing the film side of the plate against the holder (of course the focusing glass should be reversed also, or its thickness taken into consideration when focusing), by means of a prism placed before the lens, or by a mirror inclined 45 degrees to the axial light rays. For these two modes the exposure should be about one-fourth longer. Or reversed negatives by means of film may be used. Negatives of good density turn out powerful, rich prints; thin negatives give flat pictures. By employing weaker or stronger bichromate solutions there is a remedy, and from weak negatives strong and powerful prints may also be made and *vice versa*. Much-intensified negatives produce hard prints without any soft gradations, and such prints should be exposed, either before or after printing, for a few seconds to diffused daylight.

Photometer.—There are several styles, which all answer well. We shall only speak of two, the scale photometer and the block photometer. The scale photometer can be easily made by any one; it consists of a 4 x 5 glass plate, or smaller, divided into twelve, sixteen, or more squares, and formed by the superposition of pieces of mineral paper, the first square being covered with one piece, the second with two, and so on until the last, which would have twelve or sixteen pieces pasted one over the other.* A 4 x 5 printing frame is very suitable. The silvered paper is laid against the corresponding square, the frame closed and exposed to light, and when sufficiently printed the respective number will stand out white on a brownish ground. The block photometer is a small box provided with a double cover. The upper cover has a round opening cut in it, and under it is placed a glass plate divided into three sections, of which the two outer ones are painted chocolate-brown (the tint which silvered paper shows when exposed to direct sunlight for one and one-half minutes). In the case is placed a roll of sensitized paper corresponding in breadth to that of the inner section of the glass plate, or a little larger, and of any desired length. The end of this roll is drawn over the lower cover of the box so that it stands out a little. The upper cover is now closed and the photometer exposed to the light, and as soon as the silvered paper shows the same color as the painted sections it is called *one* tint.

There is now the question how to apply the photometer to the printing. The printing frames having been provided with negatives and sensitized papers, and the photometer having a fresh portion of silvered paper under the opening mentioned, are exposed together to the action of the light, and when the photometer shows the required color, the carbon paper has been acted upon by the light in the same way. How many tints, or what number of the scale photometer, requires a negative of a certain density? This question can only be answered by practice, and the beginner most assuredly will have to sacrifice some prints in order to learn how to estimate the density of the negatives in their relation to that class of photometer which he has adopted. A negative of medium density may require from three to four tints, or even more if matt varnish or some strong retouching has been resorted to. The question which photometer shall be employed should be answered first, for it is prudent to always use the same photometer, as it much facilitates the work when the printer has got well accustomed to its strength. The silvered paper for the photometer should always be of the same strength of silver, for uniformity is absolutely necessary in order to be able to rely upon the right working of all. The silvered paper is best made of Rives paper, immersed for ten minutes in a 10-grain solution of chloride of sodium, and when dry may be kept ready for use. When required, float it for two minutes on a 40-grain solution of nitrate of silver, and add about ten grains citric acid to each ounce of the solution. The sensitizing of course must be done in the dark. The paper preserves its whiteness for weeks when kept from light.

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* When all the papers are perfectly dry there should be inscribed the numbers from 1 to 12 (inverted) either with India ink or some red color.

PRINTING.

Having selected the negatives that are to be used, separate them according to their density. The printing frames must be as free from dust as possible and perfectly dry. The light should be subdued before the sensitized carbon paper is resorted to. See that the negatives are free from dust, take a piece of carbon paper, dust it well on both sides, and place it over the negative, gelatine side in contact with it. Cover with a piece of rubber-cloth or a felt pad (*must be absolutely dry*), and close the back of the printing frame. When all the frames have been filled in this way, expose to light and place the photometer close by them. Watch the photometer, and when the required tints are reached, turn those frames over which correspond. Proceed in the same way with all of them. The requisite exposure given, the printing frames are taken back to the dark room and emptied, and the printed carbon papers are now laid away in a light-tight box, and, if possible, some pressure applied to them.

Should there be some hard negatives, it is best to expose the printed carbon sheets for a few moments to daylight, which would give them a softer appearance; but care should be taken not to allow the light to act too long.

The printing for double or single transfers is exactly the same, but for transparencies a longer exposure to light is necessary.

N.B. *Care must always be taken never to employ damp tissue paper.*

Since the gelatine side of the tissue is pressed in contact with the negative, it is evident that if it retained the slightest adhesiveness on its surface it would be dangerous to press it against the negative. However there is a very efficient remedy, which was first employed by Mr. Swan; it is simply to dust the negative and the carbon paper with some steatite (French chalk or talc). Of course the dusting must be done in a careful way, and by means of a camel's hair duster as much as possible of the steatite should be removed. This imperceptible coating offers two advantages: First, it is a discoverer; for if there is any moisture left in the tissue, when passing the brush over it the steatite will adhere in patches to any moist places, and will not spread in a scarcely perceptible coating. Second, it prevents an excessive absorption of light in those parts of the carbon tissue which are in such absolute contact with the negative as to prevent the reflection from its back surface. The dusting of paper or negative, or both, does not cause any imperfection in the print.

SINGLE TRANSFER PROCESS.

This process is free from any difficult operations and may be described as follows:

The exposed carbon tissue, together with the single transfer paper, is placed in a tray containing water of not over 58 degrees F., and after some minutes are withdrawn together from the water, placed on a glass plate or wood board, and squeegeed together. They must now remain in contact for at least fifteen minutes, and slight pressure may be employed; placed in a tray containing lukewarm water, when the tissue paper will separate from the transfer paper, leaving the carbon on the latter, and the development is now completed. The developed picture is then placed in an alum bath for ten minutes, well washed, and hung up to dry.

Having subdued the light, a sheet of tissue is taken, dusted carefully on both sides and immersed in the water contained in the tray, which must not exceed 58 degrees F. The same is done with the transfer paper, but as many as five, or even more, may be placed in at once, for it does not make any difference if they remain some minutes more in the water. The tray containing the carbon tissue is rocked all the while, and care must be taken that no air-bubbles remain adherent to the tissue. It first curls, but must remain entirely immersed, or it might reticulate (especially during hot weather), when this precaution was not taken. After about two minutes the tissue flattens out and *this is the very moment* to withdraw it from the water.*

The glass plate, which must be somewhat larger than the transfer paper, should be clean and free from all dust. Place the transfer paper, *glossy side up*, upon the glass plate. Lay the tissue paper, *carbon side down*, upon the transfer paper, cover with the rubber-cloth, and apply the squeegee from center to borders, first using gentle pressure, and later applying more. Now withdraw the rubber-cloth and examine, holding the papers horizontally against the light, if they have been well pressed into contact. Remove any moisture which might be present at the borders by means of a moist sponge or linen towel, and hang up to dry. As it often happens during hot weather that the carbon tissue does not properly adhere to the transfer paper, it is better to place the squeegeed papers between two glass plates and put a weight on, leaving them under pressure for 15 to 20 minutes, then suspend them to dry. Proceed with all the sensitized tissue and transfer papers in the same way, and place the second on top of the first and so on, but always cover them with a glass plate and use pressure. The same water which has served for the first tissue and transfer paper may be used for all the rest, provided that *its temperature does not rise above 58 degrees F.* The development may be made after fifteen minutes, but not sooner.

As soon as the tissue papers have been moistened, daylight may be admitted, for sensitized carbon paper is only sensitive to light when dry.

If there are small size tissue papers, as many as the transfer paper will hold may be squeegeed into contact with it, thus simplifying the developing and other operations very much.

The rubber-cloth should not be too thick, and must always be placed with its cloth side upon the paper.

The water must stand at least four inches deep in the trays; better if deeper.

N.B. *Never proceed to develop until the bichromate has entirely covered the transfer paper, which is easily seen by the yellowish color it assumes.*

Single Transfer Paper.—This is a water-proof paper, having on one side a bright gloss. It is made in rolls exactly like the carbon tissue, covered on one side with a gelatine layer rendered insoluble by the addition of chrome alum. It may be also made as follows: Well-sized white paper is soaked for fifteen minutes in a sufficiently strong solution of shellac in alcohol; or it may be soaked in an aqueous solution of shellac, consisting of 3 parts of common unbleached shellac and 1 part of borax boiled in 30 parts of water. Papers prepared by this latter formula have a nice pink color. Single transfer papers can be bought the same as the tissue paper, for they are made by the same manufacturers.

(*To be continued.*)

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* The carbon paper may be left longer in the water, even for hours, and during hot weather I would recommend to leave it for about five minutes.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

Patents for Inventions. Abridgements of the Specifications relating to Photography.

1861. Part I, 1839 to 1859. With preface and introduction by B. Woodcroft. 12mo. pp. xx and 165. 2s. New edition, 8d., post free 10d.

1872. Part II, 1860 to 1866. With preface by B. Woodcroft. 12mo. pp. xxiv and 179. 10d., post free 11½d.

1878. Part III, 1867 to 1876. With preface by H. Reader Lack. 12mo. pp. vii and 117. 9d., post free 10½d.

1885. Part IIIa. With preface by H. Reader Lack. 12mo. pp. viii and 136. 1s., post free 1s. 1½d.

Published and sold by the Commissioners of Patents, 38 Cursitor street, Chancery lane, E.C.

These four government publications (blue books as we call them) contain much instructive and even entertaining reading for the photographer. By their aid we can trace the progress of our science from the first patent taken out for Daguerre on the 14th of August, 1839, down to the present day. Of curiosities there are not a few, *e. g.*, Scotellari's patent for an opaque lens-cap to "shorten the time of exposure when taking photographs." (Patent 3,461, 1877.)

Professor J. H. Pepper was a well-known popular lecturer on science, who was long connected with the Polytechnic Institution in Regent street, London.

1860. "The Boys' Play-book of Science." 8vo. 440 pp. (Photography pp. 138–148.) Routledge. 6s.

New edition, revised by T. C. Hepworth. 1881. Routledge. 5s. (Photography pp. 141–160.)

F. Piercy, Memorial Painter, Studio, 12 Pall Mall.

1874. "A Crucial Test in Cases of Disputed Identity: The Features of Arthur Orton and Roger Tichborne compared." Pamphlet. 8vo. 8 pp. 5 plates.

The title-page bears the date 1873, which is probably a mistake, as the author signs it April, 1874, at end, and the reviews of it also appeared in that month. The pamphlet itself is a contribution to the literature of the great Tichborne Case, and attempts to show, by comparing the daguerreotypes taken of the undoubted Roger Tichbone with recent photographs of Arthur Orton, that it is "physically impossible that they could have been taken from the same person."

P. Piquepe.

1876. "Practical Treatise on Enameling and Retouching in Photography." 12mo. 76 pp. Piper & Carter. 2s. 6d.

A. S. Platts.

1886. "The Photographer's Systematic Exposure Book." Oblong, 5½ x 3¼ inches. 61 pp. Cartwright & Rattray, 28 Brown street, Manchester. Cloth, 1s.; leather, 1s. 6d. This capital note-book contains Mr. Platts' tables for exposure.

T. Cadby Ponting.

1862. "Photographic Difficulties: How to surmount them. Instantaneous Pictures: How to obtain them." Crown 8vo. 124 pp. Bland & Co., 153 Fleet street, and T. C. Ponting, Collodion Manufacturer, Chemist to the Queen, 32 High street, Bristol. 2s. 6d.

Charles Pooley.

1856. "On Engraving Collodion Photographs by means of Fluoric Acid Gas." 8vo. 12 pp. Hamilton, Adams & Co., and E. Bailey, Cirencester. 6d.

This pamphlet is a reprint of a paper read before the Chemical Section of the British Association in August, 1856.

Lake Price.

1858. "A Manual of Photographic Manipulation, treating of the Practice of the Art and its Various Applications to Nature." Post 8vo. 256 pp. 58 wood-cuts. J. Churchill, New Burlington street. 6s. 6d.

Second edition, 1868. pp. viii and 304, with 74 wood-cuts. Churchill. 6s. 6d.

Mr. Lake Price gained a reputation, about thirty years ago, as a professional photographer of the first rank, landscape work being his speciality.

Henry Baden Pritchard, born 1841, died 1844, was the third son of Andrew Pritchard the microscopist, who wrote the "History of Infusoria." For several years Baden Pritchard conducted the Photographic Department in the Royal Arsenal, Woolwich. At the time of his death he was editor of the *Photographic News*. Besides the books mentioned below, Pritchard was the author of numerous novels, among which "Dangerfield" and "George Vanbrugh's Mistake" attained a wide circulation.

1882. "The Photographic Studios of Europe." 12mo. 280 pp. 40 wood-cuts. Piper & Carter, 5 Furnival street, Holborn. 2s. Second edition, 303 pp. 1883.

This pleasant book gives an account of the author's visits to many of our celebrated photographers both in England and on the Continent.

1883. "About Photography and Photographers. A Series of Essays for the Studio and Study. To which are added Continental Rambles with a Camera." 12mo. 220 pp. Illustrated. Piper & Carter. 2s.

The Rambles include trips to the Tyrol, Italian Lakes, Norway, and the Pyrenees. The Essays are written in that light and pleasant style which gained Mr. Pritchard so much popularity.

1884. "A Trip to the Great Sahara with a Camera. By A Cockney. Being an Account of a Month's Winter Holiday, with Diary of Journey and Statement of Expenses." Piper & Carter. 6d.

David Rees, "fifteen years photographic miniature printer to the chief London photograpers."

1868. "The Art of Photographic Coloring, in Easy Progressive Lessons. Illustrated with Colored Photographic Portraits showing the working of each process, from the Tinted Carte-de-Visite to the Life-size or Portraits." 26 pp. Two colored cartes. Published by the author, 3B Broadway, Ludgate Hill.

In the copy which I examined the colored examples were very good, still retaining their original tints.

A. N. Rintoul.

1855. "Guide to Painting Photographic Portraits, Draperies, Backgrounds, etc., in Water-Colors. With concise instructions for tinting paper, glass, and daguerreotype pictures." 12mo. Barnard, 339 Oxford street. 2s.

Second edition, 1856. 56 pp., with colored illustrations of tints.

Third edition, 1858.

Fourth edition, 74 pp.

The later editions also contain instructions for painting in oil. Barnard's catalogue of colors, brushes, etc., 34 pp., is appended to the book.

(*To be continued.*)

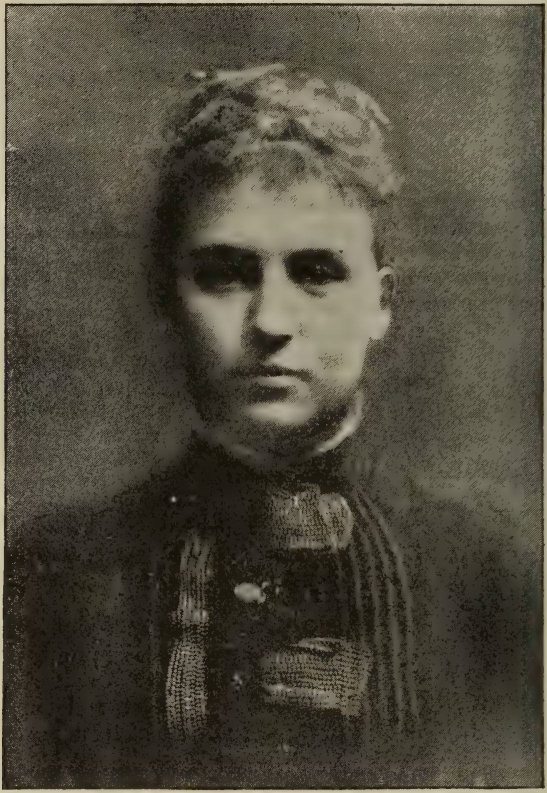
[*From The Art Amateur.*]

COMPOSITE PHOTOGRAPHS.

BY GEORGE G. ROCKWOOD.

An interesting craze in photography is the effort to produce what is called the "composite" photograph. This means a succession of photographic impressions imposed one upon the other in the same plate, so as to produce in a single picture the combined likenesses of various persons. For instance, three or more people are to be "averaged," so to speak, upon the sensitive plate. First, one is posed before the camera, in direct front or profile view, for such a fraction of the time as would ordinarily be given to one sitter as may represent the number of persons to be photographed. If three persons are to be represented, and the full time of exposure would be six seconds, the exposure for the first one of the three would be exactly two seconds. He now steps aside, and the second one is adjusted to the head rest, and, when accurately placed, he in turn gets a sitting of two seconds, and so with the third or fourth. Each one who sits before the camera represents his proportion of the full time required. So, in the case of twenty, the instrument must be so stopped down and the light so arranged that, if used upon a single sitter only, the exposure would be twenty seconds. Of course the exposure to each one of the twenty would be one second. Recently I made one of these composite pictures of nine young ladies, members of a literary club. The result would certainly indicate a high average of intellectual ability, if there is anything in the teachings of physiognomy or phrenology. My method of working is different, and, I think, much more simple than that followed by others, as the result is obtained in one operation. As I understand the previous methods, each person has been photographed separately, and from the negatives a transparency has been made, and these each in turn copied on to one plate. I see no reason why the members of the composite should not be photographed directly upon the plate. My method for securing this picture was to so reduce the power of the light as to make necessary an exposuré of eighteen seconds. As there were nine sitters, the *pro rata* exposure was two seconds. Of course it required great care to superimpose exactly one image upon another. It was accomplished as follows: I first drew upon the ground glass a fine perpendicular pencil line, which served as a central line to the head. Across and at right angles to this line I drew two others, an inch and a quarter apart, one of which ran through the line of the mouth and the other through the eye, at the caruncula, or at the joining of the upper and lower cartilages. These lines were arbitrary, and the image was adjusted to them. Of course there is quite a variation in the distances between these two lines in the human head, therefore the camera had to be carerully adjusted after each exposure. As it was very difficult to do this by hand, I constructed adjustable boards hinged at one end, with fine screws, so placed under the camera as to elevate or depress it, and another screw to move the whole camera and bed plate forward or backward, until these distances between the eyes and mouth were made to correspond with the standard. I then made a pendulum, by a weight on the end of a string, about forty inches long, practically giving one second to a motion or oscillation. This I found more practicable than a watch. Starting my pendulum, the impressions were made in quick succession. Of course the slide was returned to the holder after each exposure, and a new focus or adjustment of the succeeding sitter made. The only modification to the final picture consisted in uniting the white collars or neckwear into one. I think it would be best in future experiments to have a dark or black silk kerchief with which to cover the white neck draping, which would give a simple, uniform effect to the upper part of the body.

In the pursuit of these experiments some curious developments occurred. At first I made the natural mistake, I think, of not taking into consideration what one must call the momentum of the sensitive particles from the first blow or stroke of the light. There is on the unexposed plate what the scientists call atomic inertia. On the first exposure this is in a degree overcome, and the particles of the sensitive compound receive motion from the impact of the light, which is continued to a degree after the cessation of the exposure. The apparent effect, of course, is to increase the sensitiveness of the plate, so that the exposure should not be equal on the successive subjects, but each exposure should be less than the initial one.



Composite Photograph of a Literary Club of Nine Young Ladies.

This overcoming of the atomic inertia is to me an explanation of the curious fact that instantaneous photographs were made in the old days of the wet plate process, when the plates were not one fiftieth as sensitive to the action of a dim or subdued light as the present gelatine bromide plates, when they were exposed to brilliant light, For instance, successful photographs of waves in motion were made more than twenty years ago, under the illumination of the broad noon-day sun, which would not be over-exposed on the present super-sensitive plates. Yet in a subdued light the wet plates were made in many instances unavailable where the bromide plates would now record a quick and successful picture; or, in other words, the later bromide plates are more successful to feeble rays of light than the wet; but in brilliant lights there is comparatively less difference in the sensibility. Hence I think the stroke, blow, or impact of the bright ray overcomes this atomic inertia, imparting a momentum to the sensitive particles which continues after the light is closed.

Now, if this be so, is there not a liability to error in experiments in this line? While I believe that in the picture of the young ladies' club a fair and characteristic "average" is presented, I can readily see how one of the young ladies with round, smooth face, blonde complexion and flaxen hair, could, if not guarded against, have neutralized the impression of all of the rest, if they were of a darker style. As I have intimated, after the sensitive film has been decomposed by the action of light—by the reflection from white or light objects—it cannot be undone or modified by any exposure upon dark objects. So, if one should take a series of impressions from aged persons with faces full of lines and shadows, a fair young face would fill in all these shadows, and it matters not in what order it comes. If the smooth, white face makes its image in light, the face full of shadow will not change that result. To demonstrate this, I first made a composite picture of a number of middle-aged persons, and finally took an equal (*i. e.*, proportionate) exposure from a child's face. The average of the faces is not fifty years, but apparently much younger. Now, while this does not prove that an average cannot be made, it does show that the greatest care must be taken to prevent one face from producing a paramount effect upon all the others. A simple illustration of this is that although only one of the young ladies in my group had light trimming on her dress, it made itself quite apparent in the picture, although all of the rest wore plain, dark dresses.

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HINTS ON COMPOSITION AND SELECTON OF SUBJECT.

BY XANTHUS SMITH.

(*Continued.*)

WHERE amateurs have the time to devote and are anxious to make agreeable pictures, much advantage would be gained by following the plan of landscape painters, namely, when they have found a good subject in nature, to study it under different effects of light and shadow, noting and comparing. I have occasionally made a sketch of a scene, thinking the effect admirable at the time I commenced it, and found after working an hour or so that it improved immensely; or, perhaps, seeing it a month later in the season, when the sun had got further around in her course, and higher in the heavens, its charms were still further added to.

This is especially apt to be the case in wood and dell scenes, where a stream of sunlight pouring in upon a mass of rocks, vines, or mossy bank or shingle, will bring out a foreground, and immensely enhance the beauty of such a picture.

The interest and completeness of landscape photographs would generally be greatly added to if suitable groups of figures or cattle could be secured in them. The difficulties attendant upon the attainment of this I know are very great, and yet, like many other things which are difficult to attain, the accomplishment is the more credit to the successful aspirant. Extended landscape views, and views taken among grand mountain scenery, may very well be without people or domestic animals, as they would generally interfere with the quiet repose or lonely grandeur of the scene, and they would at any rate necessarily be diminutive. But in that kind of landscape work which is best adapted to the powers of photography, little domestic scenes and picturesque rural bits, figures are almost indispensable, not only from the additional interest which life gives to the scene and its appropriateness, but on account of the opportunity afforded of getting spots of high light and deep shadow, generally brighter and deeper than any in the picture, and giving, by contrast, the proper relative values to all the other tones. Such touches are invaluable as a means of clearing up a picture, as artists call it, that is, giving brilliancy to it. The chances are so rare, in the case of people, of finding them when wanted, or, should they be present, of securing their services, that I think it would be well worth the trying for a party setting off for landscape work to take their models with them. Let them get a good stout chunk of a girl and boy, well grown, and a smaller child, and clothe them in light and dark, not the same from head to foot, and provide them with basket, bundle, or stick. In water scenes they will make admirable groups with a boat, and in posing them do not get them too near, so that they swallow up the picture, or so far off that they vanish into utter insignificance. If your view is at all valuable as a picture, keep the figures subordinate to it though. Pictures in which the figure groups play equal part, and divide the attention equally with surrounding scene, are not apt to be successful. Break up your large blank space in the foreground; or, if you have not such for your group, pose them so as to balance or complete the composition of the other principal features of the work. It is almost impossible to manage a single figure; they are only a spot if seated or a post if standing; but with three, by keeping two near together and one a little off, you can arrange many agreeable groups. With cows, or cattle generally, you must take your chance. It is impossible to try to arrange them, as they become frightened and scatter. Wait patiently for an hour or two, and the chances are that while grazing or resting they will once or twice fall into good composition with the scene.

In conclusion, I will say that many will consider the pursuit of landscape photography not worth so much care and consideration; they may feel that in taxing themselves in this way they are robbing themselves of the mere sport that is to be derived from an outing. But I know there are others who would consider themselves much better compensated at the end of the season in having secured a dozen complete and beautiful pictures than if they had made some fifty indiscriminate views.

COLOR-SENSITIVE METHODS AND HOW TO WORK THEM, WITH ESPECIAL REFERENCE TO ERYTHROSIN.

BY CHARLES EHRMANN.

[Read before the Photographic Section of the American Institute.]*

The most difficult subjects in photographic portraiture which I have encountered during a period of nearly forty years, came before the camera at the time of the late civil war. Officers and enlisted men who were clad in coats of many colors desired their pictures taken before they "marched on." Pictures of these men, coming from counting-house, store or workshop, were hard enough to make on account of the unphotographable colors of their uniforms, but the faces had one redeemable and very important quality, they looked like those of other white men. But let us imagine these same men in the same coats returning to New York after having served for six or more months at the front, exposed to a Southern sun and all the hardships and privation of war. A very beautiful specimen of that class of humanity I remember, the boys belonging to a Vermont regiment, and another, a New Jersey cavalry organization. The former wore light gray coats with blue facings, the other blue tunics and trousers, trimmed with yellow lace, *a la Hongroise.* Imagine, as contrast to these uniforms, light blue eyes, yellowish blonde hair, and faces of dark tan color! Some of the members present probably remember those men, and concur with me that, when a whole regiment of these fellows had come for re-enlistment, the photographers—I mean the operators, not the proprietors—located near the barracks were driven almost to desperation, for with the most sensitive collodion, the longest possible exposure, and the most forcible illumination, we were not enabled to impress the plates as we desired they should be. Retouching the negative was not then known, and how the pictures we made looked, as a consequence, can easily be imagined.

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* By some mistake the paper on page 302 of last BULLETIN was marked as read before the Photographic Section of the American Institute; this is incorrect, it was read before the Society of Amateur Photographers of New York.—EDS.

When we look upon the improvements which have recently been made in photography, and recollect all the old difficulties, every fellow-craftsman should feel proud that, by scientific researches and hard practical work, thousands or these obstacles have been removed from the path we follow; that the art-science has, within less than half a century, been developed into one of the most important aids in science and the fine arts, one of the greatest sowers of education; and thousands of men now obtain through it interesting and profitable employment.

Of all the progress recently made, we should give particular consideration to color-sensitive processes. When I use this term for the class of work we are about to speak of, I must assure you it is done with mature deliberation. Becquerel, I believe, proposed to name isochromatic those plates or processes with which color values are reproduced correctly, or nearly so. When these methods of working had drawn the attention of many photographers toward them, and various successful experiments had been made, Dr. Eder showed us that orthochromatic was a more descriptive term. Now, an Englishman, an orthodox philologist, not satisfied with that, proposes kairo-lamprotic (in proper proportion of brightness) as being better, and some one else thinks axioscotic (shades in equal value) is the right thing, while a German is satisfied with the simple chromatic. In Germany, where the pioneering in this new and wonderful branch of photography was done, and where most decidedly it has been brought to its present perfection, they begin now to speak of farben-empfindliche methods. This compound German word fortunately can be translated into an English word as comprehensive and descriptive as the original one, and I cannot well see why we should not also accept and use it.

"Color-sensitive" certainly will be understood by everybody, and preference should therefore be given to it over the high-sounding Greek compounds.

We sensitize our plates now not only to obtain with them general effects of light and shade, but also to impress upon them the effects of colors in the same brightness or proportion of tone-value as the eye notices them.

It must have come under the observation of those even that are entirely ignorant of photographic matters, that certain objects have never been reproduced as they should be. Some objects copy too dark, and others, which look quite dark in the original, are photographed entirely too light, while some make no impression whatever. The cause of this seemingly incongruous action was, however, even understood in the earliest times, and of the first experimenters, Niepce, Sir H. Davy, and Sir John Herschel knew why it could not be otherwise.

Light does not act in its entirety upon a photographic surface, but only certain parts of it, while others remain inactive.

The force of power that causes chemical action we have called actinism, and the rays of light giving the effect, actinic. Actinic rays are those found on one end of the spectrum, the violet and blue, and called most refrangible by spectrum analysts. Red, orange and yellow, at the other end of the spectrum, do not act at all, or but very little. These rays do not deviate so much from the path of undivided light, like blue and violet do, and are therefore called less refrangible.

(*To be continued.*)

During the past month one of the amateur photographers of the city has been at work upon composite photographs of the Senior Class at the Norwich Free Academy. They are just completed, and surely speak well for the average girl and boy of Norwich. One comprises the twelve senior boys; another the twenty-three senior girls; while a third is a combination of both sexes. The pictures are now on exhibition at the store of M. Safford & Co.—*Norwich* (*Conn.*) *Bulletin.*

A SUGGESTION FOR A PHOTOGRAPHIC TIME STANDARD.

To the Editors of the BULLETIN.

I TAKE opportunity of sending the following while interest is naturally drawn to the subject by the article from Mr. Dallmeyer in the BULLETIN.

As a viewist of considerable experience and a student of photographic optics, perhaps you may allow my hobby standing room, upon a certain merit of its own, among the many suggestions for a photographic time standard.

Using a number of different focal lengths, I find it necessary to compute the relative light value of the diaphragm throughout the whole in the form of a table. Though this answers the purpose, the want of relation by some common multiple is still an inconvenience.

Great simplicity being necessary to familiarize the practical photographer with any optical formula, and as it seems to fall in with Mr. Dallmeyer's latest suggestion, namely the use of the number ten as a multiple, I would suggest as follows:

First.—(As I believe Mr. Dallmeyer considers.) That the aperture of diaphragms should decrease in the ratio of halving their area or light power, and when an intermediate one is necessary it must not be allowed to interfere with the completeness of the set having that ratio.

Second.—That the numbers 5, 7, 10, 14, 20, etc., be used to express the diameter of all standard apertures as representing the square root of area or light value in each succeeding increase or decrease. Of course this is not strictly true, as 5 x 5 = 25, while 7 x 7 = 49, and not 50, as strict accuracy would require. But I believe this infinitesimal fraction, $\frac{1}{50}$, may be overlooked as inappreciable, and would urge that practically we may say that 5 x 5 = 25; 7 x 7 = 50; 10 x 10 = 100; 14 x 14 = 200.

Third.—I would suggest as a result of my experience, that for instruments including different angles for a given sized plate, a ratio of focal lengths corresponding to above numbers 5, 7, 10, etc., would be well adapted to all manner of subjects.

Fourth.—Would it not be also of advantage if cameras and, consequently, plates were made in sizes 5 x 7, 7 x 10, 10 x 14, as plates could then be cut from any size without waste; also the different sizes would be all of the same shape, whereas the present sizes, as 5 x 7, 5 x 9, 6½ x 8½, 8 x 10, and 10 x 12, are obviously of no relative length and breadth.

Fifth.—As would almost necessarily follow, the same numbers might be used to indicate the intensity or light power of the individual instrument. Thus in a lens of a given focus having the diameter of aperture equal to one-fifth of same, the largest diaphragm would be marked 5, next smaller 7, 10, 14, 20, etc., these numbers representing in plainest terms the actual ratio of diameter to focal length.

Respectfully yours,

ROBERT AUCOCK.

[The above suggestions of our correspondent are all excellent, except the fourth, in which he proposes new sizes of plates. To this we would remark that the size and form of the plate is more a matter of taste than one of convenience in cutting; in other words, the subject viewed from an artist's standpoint will always determine the form of the plate used to obtain the negative.—EDS.]

ANTHONY'S RELIABLE BROMIDE PAPER.

Directions for use.

DEVELOPER.

A.

Oxalate potash	8 ounces.
Hot water	24 fl. ounces.

Make acid with acetic acid No 8. Test with blue litmus.

B.

Pure ferrous sulphate	8 ounces.
Hot water	16 fl. ounces.
Sulphuric acid, C. P.	10 minims.

C.

Bromide potassium	1 ounce.
Water	32 fl. ounces.

The dry measure above quoted is based on 437 grains to the ounce. Keep these solutions separate; they must be mixed only for immediate use.

TO DEVELOP.

A	3 ounces.
B	½ ounce.
C	10 minims.

This solution should present a brilliant ruby color after combination. Solutions A and B should be allowed to settle clear before using, and a developer should never be placed on a print while warm. Immerse the exposed sheet in water in a tray or dish of suitable size; after thorough saturation, make sure that you have the paper film side up, and then drain the water off slowly, allowing the sheet to sink gradually into close contact with the bottom of the tray. This will prevent ridges being formed by bubbles of air between the dish and print, and is very important. With an even sweep of the graduate flow on the developer, as with a plate. If the exposure is correct, the image should appear in about the same time as with a well exposed plate. Continue until the shadows are sufficiently strong and high lights present the expected detail; at this stage pour off the developer quickly, and as completely as possible, and without rinsing the print flow with the

CLEARING SOLUTION.

Acetic acid	1 dram.
Water	1 quart.

This should be repeatedly applied, say three or four times at least, in sufficient quantity to cover the print, allowing half a minute between each application to admit of the thorough action of the acid. In the case of large prints a final ten minutes' soaking in a fresh bath of the clearing solution is strongly advised.

After a careful wash of not less than three minutes in running water, or three changes during the same time if water supply is short, transfer to the

FIXING BATH.

Hypo	8 ounces.
Water	40 ounces.

Be sure and submerge the print in the fixing solution, and see that that there are no air-bubbles to prevent fixation. Fix for ten minutes, after which remove directly to a dish containing

Common salt	8 ounces.
Water	64 fl. ounces.

The time the print remains in the salt and water is not material. After a lapse of not less than three minutes, remove and wash in pure water. Let the washing be as thorough as your convenience will allow,

MOUNTING.

First.—For large work provide a smooth table not less than the size of the largest print you intend to make, and on this lay a piece of rubber-cloth sufficient to cover and overlap.

Second.—Next get a good sheet of plate or French glass of proper size. If glass cannot be obtained of suitable size, as mooth board covered with rubber-cloth will answer perfectly.

Third.—The board should be well stayed at the back so as to prevent warping, as that would be very troublesome and unsatisfactory.

Fourth.—A flat bristle paste brush of not less than four inches wide; five inches is better.

Fifth.—Make your paste of good starch; it will be found to stick better if the boiling is stopped just before it becomes translucent.

Sixth.—A 10-inch rubber squeegee.

Arrange the piece of plate glass or board on a slight incline, with the lower end towards your print washer. Raise a print carefully, and, laying it face down on the glass, with the squeegee remove all surplus water. Paste smoothly from end to end, and crosswise, and, if a stretcher is used, paste the muslin also. Raise the print and center it over the mount; bring the two in contact squarely in the usual manner, then turn the mounted picture face down on the rubber covered table, and with a wad of cotton flannel rub down from the back, taking care to avoid touching the sides of the frame, as that would make a paste line that it would be difficult to get rid of afterwards. After rubbing from the back, raise one end of the rubber cloth, and with it the stretcher; grasp the stretcher and drop the cloth, which will fall easily from the surface of the the print. With the palm of the hand dampened, rub the air-bubbles towards the edges, and when smooth hang up to dry. If a card-board mount is used follow the above directions, except in pasting the mount; and instead of laying the mounted print face down to rub, put the print on the table face up and lay the rubber-cloth over it. A few strong sweeps of the squeegee will assure perfectly smooth contact. Prints may be dried and afterwards wet and mounted when convenient.

The treatment of small prints is exactly similar on a reduced scale.

CONTACT PRINTING.

Adjust a negative in a printing frame as for ordinary silver printing. In a room lighted with a safe yellow light, open the package, and, taking a sheet, lay it carefully in contact with the film side to the negative; pad and clamp down the back of the printing frame. Exposure may then be made to the flame of a kerosene lamp or a gas burner. The time must be determined by the intensity of the negative and the brilliancy of the illumination. With a negative of the best quality and a light of the ordinary house-burner type, the exposure should average about thirty to forty seconds four feet from the burner. Reducing the distance decreases the time, but it is liable to increase contrast. Daylight may also be used, but, both on account of its variable character and the sensitiveness of the paper, it is not recommended, as it is unmanageable except in the hands of an expert.

Vignetting can be easily accomplished, the only thing to be determined being the proper aperture of vignette to suit the distance from the source of light, after which once fixed always fixed.

PROOFS FROM WET NEGATIVES.

With this paper a proof may be shown to a sitter within ten minutes after the negative is developed. After development, fix and wash the negative well under the tap for about three minutes; wet a piece of the reliable paper and squeegee in contact with the negative, a piece of paste-board held against the paper at the back will protect from light, expose and develop as directed. Proofs or prints not intended for mounting should be dried by squeegeeing face down on a piece of polished rubber. When dry they peel off with a beautiful enamel.

BURNISHING.

If you wish to burnish contact prints don't attempt it until they are perfectly dry, and use dry Castile soap as a lubricator. Only the heavy and light smooth papers should be burnished, the grained paper cannot be so treated.

ENAMELING.

Rub the surface of a piece of clean plate glass with a tuft of cotton-wool and French chalk until it has been evenly treated all over; then carefully remove all traces of dust, and coat with a plain collodion composed of soluble cotton, 50 grains; alcohol, 5 ounces; ether, 5 ounces. Allow this to set, and immerse in a dish of clean water till all the oily lines disappear. The print may then be placed in the same dish film down and brought into contact with the collodionized plate under water; this prevents the possibility of air-bubbles. Carefully remove the glass from the water, and with a squeegee press out all moisture as completely as possible. When thoroughly dry, rule with the point of a knife and a straight edge through the paper to the glass; on lifting one edge with a gentle pull the whole will come off with a magnificent enamel, equal to the finest carbon print.

REASONS WHY.

The developer must be acid, if not the prints will be foggy and measly. A clearing solution must be used, because oxalate of iron cannot be washed from paper unless the washing water is acid, and if it is not so washed you will have yellow prints. Please remember this, as it is very important. Don't increase the proportion of acid. It isn't necessary. *Quantum suff.*

A salt solution should always be used as a preventive to blisters: "Prevention is better than cure." See.

Your hands and dishes, etc., must be clean anyhow if you want to do good work of any kind, but when you begin this process if you have any job lot of untidy habits left, "relegate them to the limbo of obscurity." At any rate never touch a piece of paper either to expose or develop while there is the slightest suspicion of hypo on your hands. Avoid handling dry pyro or the compounding of a pyro developer in the room where you expect to make prints. If you don't you will see stars, but they won't be "beautiful stars" in your opinion.

Don't use your hypo for more than two days' prints, supposing you make at least ten 30-inch prints per day. Four gallons of the solution of the strength mentioned here should fix twenty-four 30 x 40 prints and no more. The cost isn't more than 25 cents to change, and the old solution is full of silver, so there is no loss, and clear white prints are assured.

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TO THE PHOTOGRAPHIC FRATERNITY.

TIME has carried us swiftly on since our last meeting in St. Louis, and will soon bring us together again at the Convention in Chicago, which will open on August 9th. To our association the great event of the year is the Convention; there we renew old acquaintances and friendships, and make new ones; exchange ideas, and show our work. There we go to learn and to teach; to make selections of apparatus and accessories from the thousands of useful articles exhibited by the enterprising stock dealers in their departments; and we thus combine both pleasure and profit by spending a few days amongst friends and fellow laborers and the most beautiful attractions that the art of photography can offer us. All should avail themselves of this opportunity for pleasure and recreation, and so enjoy all the benefits of membership of the Photographers' Association of America.

I trust that the craft will turn out strongly, both in numbers and in exhibits of work for our grand art department, for which the association at the late Convention at St. Louis voted the sum of one thousand dollars (out of its own funds) for prizes. The Executive Committee at its meeting in January endeavored to meet all the demands and suggestions of the fraternity as well as those of the photographic journals, and after careful consideration a schedule of prizes was adopted for the more important classes of practical photography, being one diamond badge (grand prize), seven gold, thirteen silver and ten bronze medals for home productions; one gold and one silver medal for exhibits from abroad; and one silver medal for the best improvement in photo apparatus or accessories produced since the last Convention. In order to prevent the carrying off of medals by the same parties who won them last year, and to give others a chance, it was resolved that for the coming Convention, winners of gold medals at the Convention of 1886 should be eligible for the grand prize only, and winners of silver medals to be eligible for gold medals and the grand prize only, which latter is open to all members of the association. By these means the winners of last year compete in higher classes this year and have an incentive to eclipse their work shown then.

To meet the demand of a majority of our members, that photographers of smaller resources who cannot compete with their more fortunate brethren in the large cities should have a chance to win an association medal, a class was formed for their benefit, for which class ten bronze medals of merit are to be awarded for the best ten collections of twenty-four cabinets each; and in order to reserve these for those for whom they are intended, it was resolved that parties competing in this class cannot compete in any other class. A rule was also adopted that all competing exhibits must be without frames or glass, so that the merits of the photograph alone will appear, and also to more easily make comparisons for award. It is hoped that the work of the Executive Committee will prove satisfactory to the members, and I can only add that we have done only that which we considered to be for the best interests of the association. Bring with you or send your choicest work, so that you may compare it with that of your friends and learn if there is room for improvement.

Come prepared for practical discussion on photographic subjects. Contribute your share towards the general fund of knowledge and experience, and do not hide your light under a bushel. Be as much prepared to give the advantage of your experience to your colleagues as you are to receive information from them, as in this manner only can be attained the great object for which our association was formed. Our association, born seven years ago in Chicago, will return to its birthplace full of vigor and strength, with the best prospects for permanency, it now being an incorporated society.

Come and enroll yourself in the ranks of our grand army, which has inscribed on its banner the progress of photography; help to fight the battle for improvement in every direction; be in the front rank at all times and do not lag in the rear.

Use the short time left for preparing, and, when the time comes, come one come all. Fraternally yours, G. CRAMER,

President P. A. of A.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

The Committee on Transportation has obtained reduced rates of fare for those attending the Eighth Annual Convention of the Photographers' Association of America. Any further concessions or arrangements relating to transportation or hotels will be published in the several photographic journals. A liberal reduction on hotel rates is assured.

Charles Gentilé,
Local Secretary and Committee on Hotels.

Transportation.

A first-class ticket (either limited or unlimited) must be purchased to Chicago, for which regular fare will be paid, and upon request the ticket agent will issue a certificate of such purchase.

If through tickets cannot be procured at the starting point, you will purchase to the most convenient point where such through tickets can be obtained, and repurchase through to Chicago, requesting a certificate from the ticket agent at the point where repurchase is made. Tickets for return will be sold by the ticket agent at Chicago at one-third the lowest regular limited fare. In case there is no limited fare to the point desired, one-third of the regular unlimited fare will be used.

Certificate for return tickets will be signed by G. M. Carlisle, *Treasurer.*

It is very important that a certificate be procured, as it will indicate that full fare has been paid to Chicago and that you are entitled to the reduced fare for returning.

Gayton A. Douglass,
Committee on Transportation.

Second Report of Committee on Transportation.

We find that a lower rate of fare can be secured if fifty (50) or more will rendezvous at some one point, and purchase their transportation at the same time.

The rate will be one fare for the round trip.

It is to be hoped that members will at once interest themselves in locating one of these excursions.

Apply to the undersigned if you will engage in this work, and circulars will be furnished.

Gayton A. Douglass,
Committee on Transportation.

185 Wabash avenue, Chicago.

◆

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

The Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A cash prize of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

AIR BRUSH PRIZES.

The Air Brush Manufacturing Company will offer two prizes at the Convention of the Photographers' Association of America to be held in Chicago, August, 1887.

An air brush will be given for the best portrait in black and white, finished exclusively by it, and another will be given for the best water-color portrait finished exclusively by the air brush. Portraits may be of any size and upon any print.

The awards will be made during the Convention by three judges who shall be members of the P. A. of A., and who shall be chosen at the time of the Convention.

Each certificate of award will be accompanied by an order upon the Air Brush Company for one complete air brush.

W. H. WALMSLEY'S PRIZE.

W. H. Walmsley & Co., of Philadelphia, offer two prizes for competition at the Chicago Convention.

First Prize.—For the best portraiture, from cabinet to life-size, made with Beck's "Autograph" Lenses of any size, not smaller than No. 6, one "Autograph" Lens No. 7, of the cash value of $100.

Second Prize.—For the best work, other than portraiture, such as landscapes, architecture, interiors, etc., made with Beck's "Autograph" Lens of any size, one No. 5 "Autograph" Lens, of the cash value of $60.

* * *

Don't forget that the Convention meets in Chicago on August 9th to 12th, inclusive, and it will pay you to be there.

THE BLAIR PRIZE CUP.

Mr. T. H. Blair, of the Boston Art Club, offers a handsome silver cup for competition at the Chicago Convention. The conditions of the offer are stated in the following letter to the Executive Committee of the Photographers' Association of America:

"Desiring to contribute something which will express my interest in photography, and aid to promote the welfare of the art, I beg to ask if the association, of which you are its esteemed officials, could with propriety accept the custodianship of a prize cup, of which the inclosed print is a reproduction. The cup is to cost two hundred and fifty dollars, and is made of silver by the firm of Tiffany & Co., of New York, and measures eleven inches in height. My original object is fully made clear by the inclosed circular, but owing to the prominent clubs declining to participate (for good reasons), and desiring to carry out my idea of creating a competition, which I feel confident would prove interesting and beneficial, I offer this cup to the Photographers' Association of America with only the following conditions: The cup shall be competed for at least every ten years for ten successive years, and shall then become the property of the party winning it the greater number of times. In the event of no one party winning it more than once, or a tie between the competitors, the successful competitor in each competition may by vote place it with any photographic association. In the event of the winner declining or neglecting to thus vote to present the cup, it shall became the property of the association having the largest number of members in the United States.

"Yours truly, T. H. Blair.

"Boston, May 26, 1887."

[The circular accompanying Mr. Blair's letter relates to the offer of the cup to the amateur societies. We have a picture of the cup at the Bulletin office, and it is a truly handsome piece of silver-work.—Eds.]

OUR ILLUSTRATION.

For some time past we have been looking out for some good pictures of Niagara Falls with which to illustrate the Bulletin, and lately we saw some very good ones made by a prominent amateur photographer of New York City. At our request he kindly lent us the negatives, and we are thus enabled to give our readers a specimen of his work at the world-renowned water-fall. The pictures speak for themselves, being artistic, and fine examples of instantaneous photography.

HYPOSULPHITE TRACES IN ALBUMENIZED PAPER.

We know that in order to obtain a positive print free from hyposulphite of soda it is necessary to subject the paper to a number of washings and to frequently renew the water. This undoubtedly is the best method, but it has the fault of taking up considerable time. To reach the same result, it suffices to plunge the sheet, after fixing, into hot water, which rapidly dissolves the last traces of hyposulphite. After two or three washings the print is allowed to dry, and it may then be kept an indefinite length of time without fading.—*Progrès Photographique.*

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, MARCH 8, 1887.

(*Continued.*)

THE beautiful effects of polarized light on different substances was then shown by a two-foot disk on the paper screen, and these experiments proved to be the most attractive of the evening. They were viewed by transmitted light.

First were shown films of selenite, next selenite in a liquid cell. As the particles fell through the liquid before the different parts of the polarized light beam, when the latter was projected through the cell, they appeared to float or rise on the screen and in their ascent changed to beautiful red, green and blue colors.

Following this specimen were several of a similar nature, some coming out more brilliant than others. A list of the slides shown embraced granite, brecciated jasper, front stone, chalcedony from Cornwall; rhodizite from the Tyrol; platino-cyanide of yttria, platino-cyanide of barium, platino-cyanide of magnesium, boracic acid, lithic acid, tartaric acid, brucine, salacine, santonin, asparagine, chloride of barium, sulphate of ammonia and iron, and cane sugar.

At the conclusion of these illustrations the lights were turned up, and, on motion of Mr. Robert Roosevelt, a unanimous vote of thanks was accorded to Mr. Hopkins.

Though the entertainment was composed largely of a succession of experiments, yet they proved more enjoyable to a majority of the audience than if the subjects treated of had been embodied in a scientific essay.

Mr. Hopkins' easy and rapid method of illustrating by a few simple experiments some of the difficult problems in light, making them plain to the common understanding, is certainly worthy of imitation, and he is to be congratulated in showing what can be done in this line.

Many ladies were present to enjoy the entertainment.

Shortly before ten o'clock the meeting adjourned.

FIRST SPRING LANTERN EXHIBITION, WEDNESDAY EVENING, MARCH 23, 1887.

THE meeting was called to order at 8.15 P.M. *President* BEACH in the chair.

The *Secretary* read a synopsis of the minutes of the previous meeting, which was accepted.

The *Secretary* read the names of new members recently elected by the Board, as follows. Active: Chauncy C. Hotchkiss, L. Mortimer Thorn, Jr., A. C. Morgan, H. D. Spear. Associate: F. M. Rites. Corresponding: C. D. Irwin, Chicago, Ill., and J. George Garneau, Quebec, Canada.

The *President* stated that the programme of the evening was to include the exhibition of 125 lantern slides contributed by the Boston Camera Club, but it was ascertained just before the meeting that a number of them had been mislaid, hence only those that were at hand would be shown, in addition also to a few contributed by our own members. The balance would be shown at some future time.

Instead of the society's lantern, a special single lantern, operated by John J. Wilson, was used. It was an improved Fairchild lantern, furnished for the occasion by McAllister, and its novelty consisted in special attachments for the supplying of both the oxygen and hydrogen gases as fast as used without the use of iron cylinders.

The chlorate of potash and black oxide of manganese, held in a long tin cylinder (2 feet long by 2 inches in diameter), generated the oxygen when a Bunsen burner underneath heated the tube. It was only necessary to move the tube along a short distance, when a fresh supply of oxygen was needed, or to lower the flame in case it was generated too fast. As the oxygen was evolved it passed through and from an asbestos strainer inserted at the outlet end of the tube, into a rubber bag placed under the lantern, the bag being some two feet long by ten inches in diameter, and held compressed by four or five stout rubber bands. The tension of the bands was sufficient to give a good pressure to the gas.

The hydrogen was obtained by converting a small quantity of a hydro-carbon called gasoline from the liquid to the gaseous state by a small amount of heat. The strong iron receptacle for holding the hydro-carbon was located in the front base of the lantern; a pipe running to the rear conveyed it to the heating burner from whence it escaped in the form of a gas to the burner. A second branch pipe also conveyed the gas to the Bunsen burner under the oxygen tube. So this hydro-carbon after once being converted into a gas, not only supplied heat to change it into gas and to heat the oxygen tube, but also when converted was consumed in the mixed jet to furnish the light. The hydro carbon being of a volatile nature there is no difficulty in obtaining sufficient pressure. It should be stated that the gasoline is first converted into a gas (that is to start itself) by means of a small alcohol lamp located at the rear of the lantern.

In case the oxygen is generated too rapidly a special automatic safety valve is provided to allow the surplus to escape. Suitable valves and faucets are arranged to control the movements of both gases.

The lantern was nicely finished in nickel and at the same time compact and strong.

The lights were then lowered and the exhibition commenced. Mr. Eckert read the titles of the pictures and Mr. Frisbie assisted Mr. Wilson. A whitened muslin screen was set up in front of the folding doors.

Altogether about seventy-five of the Boston slides were shown.

After the exhibition Mr. Wilson explained more minutely the working parts of the lantern, showing that more than enough oxygen had been generated, and that there was still sufficient left to last for some time.

During a short recess Mr. Beach exhibited an improved plate holder lately patented by Mr. M. P. Warner of Holyoke, Mass.

As many ladies and new members were present, at the suggestion of Mr. Walker a brief exhibition of a few slides made by members of the society then followed, after which the meeting terminated.

Mr. Wilson had no difficulty in restarting the lantern. He remarked that it was comparatively new to him, but any one could see that it was very easily operated. It was also very compact and portable. The amount of oxygen consumed during the evening, in his opinion, did not cost more than 20 cents.

The putting of the oxy-hydrogen lime light, perfectly safe in its management, thus within the reach of those who need it in country towns, schools, lecture-rooms, etc., will undoubtedly prove to be of much importance and usefulness.

THIRD ANNUAL MEETING, APRIL 12, 1887.

THE meeting was called to order at 8.15 P.M. by *President* BEACH.

Secretary GRANGER then called the roll, showing thirty active members present.

The *President* gave a synopsis of the minutes of the previous annual meeting, which was adopted.

The *Secretary* then read his and other annual reports as follows:

Annual Report of the Secretary.

The Secretary reports that during the past year he has worked in harmony with all the members of this society, and with members of other societies at home and abroad. The increase in membership reported by the Chairman of the Membership Committee has been largely due to the correspondence conducted by the Secretary, and by the books and circular-letters published by him under the direction of the society. For a full detailed statement of meetings held and records thereof, reference is requested to the published Proceedings, which will give all information desired upon this subject.

The Secretary is gratified to be able to report that his correspondence shows a vigorous and pronounced growth in the study and pursuit of amateur photography, and a great and increasing interest in this society and its proceedings, which is evidenced by the fact that he is frequently in receipt of communications requesting information and blanks upon which to base organization papers for other societies; which are always cheerfully furnished.

The Secretary reports the society as on good terms with all other clubs and societies at home and abroad, and congratulates the members on the fact that it is rapidly assuming a position in the front rank of art associations in the United States.

Respectfully submitted.

JOHN T. GRANGER.

Secretary.

MEMBERSHIP STATEMENT.

	Active.	Associate.	Subscribing.	Corresponding.	Honorary.	Total.
Membership, April 1, 1886......	97	5	10	11	5	128
Additions during the year.......	35	11	4	16	..	66
Total	132	16	14	27	5	194
Resigned 16	..	..	1	1	..	
Died..................... 1	17	..	..	..	..	19
	115	16	13	26	5	175

Net gain for year, 47, with five applications pending.

Net gain preceding year, 35

We lost one Active Member by death, Mr. Gilbert A. Robertson, an enthusiastic amateur photographer and a worthy member of this society, who died on the evening of our last annual meeting.

Respectfully submitted,

J. T. GRANGER,

Chairman Committee on Membership.

After which the report of the Treasurer was read, which showed that the receipts had been $3,823.58, and the expenses $3,538.78, leaving a balance of $284.80 on April 1, 1887.

Then followed the annual report of the Librarian, from which we abstract the following: During the past year about two hundred and twenty-six books, pamphlets and papers were donated to the society, and sixteen were purchased.

During the past year the following journals have been kept regularly on file:

The Amateur Photographer........	London.
Anthony's Photographic Bulletin....	N. Y.
British Journal of Photography.....	London.
Lithographer and Printer...........	N. Y.
Philadelphia Photographer	N. Y.
Photographic Beacon	Chicago.
Photographic Eye	Chicago.
Photographic Times	N. Y.
St. Louis Photographer............	St. Louis.
Scientific American	N. Y.
Scientific American Supplement....	N. Y.

Messrs. Anthony & Co. have continued to publish for the society its official Proceedings without expense to it.

The Librarian desires to extend his thanks to publishers who have so generously contributed their publications, and trusts they may one and all receive a special vote of thanks from the society.

(*To be continued.*)

Bibliography.

THE TEHNO-CHEMICAL RECEIPT BOOK. By W. J. Brannt and W. H. Wahl, Ph.D. Philadelphia: Henry Carey Baird & Co.

This is a handsome small octavo volume of about 460 closely printed pages in clear type; with a capital index, covering 33 pages, a very desirable and useful adjunct to a book of this character. In looking through the large store of information packed into its pages we find considerable space devoted to photography and many useful formulas for photographic manipulations. But in addition to the articles devoted to photography, we note others on varnishes and lacquers, paper, oils, glass, gilding and bronzing, paints and pigments, cements, glues, pastes and many other things that are directly or indirectly useful to the photographer. Altogether we cannot help thinking this will prove a useful book of reference for the studio and dark room. The information appears to be well selected from a large number of sources, principally German, and the arrangement of the articles is such as to facilitate reference and make the book readily useful.

THE ART OF MAKING PORTRAITS IN CRAYON ON SOLAR ENLARGEMENTS. By E. Long, Quincy, Ill.

We have before us the second edition of this valuable little treatise. It seems but a short time ago that we noted the issue of the first edition; but the work proved so useful and the explanations were of such a practical character, that the first edition was soon exhausted and a second one was in demand. In the treatise before us many new ideas have been added and the whole subject brought down to the latest practice in the art. Mr. Long's method of treatment is at once simple and clear, and the success of his work is the best tribute to its usefulness. Those of our readers who are thinking of taking up crayon work should not fail to possess this small, but eminently practical treatise.

We give below the table of contents of "Wilson's Quarter Century of Photography." Later on we shall have more to say about the volume, which bears the promise of being useful and important.

1. The History of Photography.
2. The Theory of Photography.
3. Light.
4. The Camera.
5. About Lenses.

6. The Diaphragm, or Stop.
7. Glass-house Construction.
8. Under the Sky-light.
9. The Application of Art Principles.
10. Outdoor Operations.
11. Exposure; or, the Question of Time
12. Concerning Chemicals.
13. Dark Room Contrivances.
14. Negative Making, "Wet."
15. Negative Making, "Dry."
16. Negative Making, "Paper and Film."
17. Retouching and Decorating the Negative.
18. Printing on Albumenized Paper.
19. Printing Drawbacks and Defects—Causes and Remedies.
20. Printing Room Particulars.
21. Peculiar Printing Processes.
22. Color-sensitive Photography—Isochromatic, Orthochromatic.
23. Photo-engraving.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. H. H. writes: Will you kindly answer, through the column of the BULLETIN, the following question? "What is it that makes one lens more rapid in its working than another?" By replying you will greatly oblige a subscriber to the BULLETIN?

A.—To answer this question satisfactorily would take up more space than we can well spare in this column, but the following general statement will perhaps suffice. The rapidity of a lens depends upon the relation, or ratio, of aperture to the equivalent focus. Thus if a lens has an aperture of two inches and an equivalent focus of six inches, dividing the focus by the aperture we get three. If we have another lens four inches in aperture and twenty-four inches equivalent focus, by the same operation we get the figure 6. By squaring these figures we get the numbers 9 and 36; and if the first lens takes nine seconds' exposure, the second one will require thirty-six seconds, or the second lens is four times slower than the first. For more detailed information upon this topic we refer our correspondent to "The Choice and Use of Photographic Lenses," by J. H. Dallmeyer, and printed by our publishers.

Q.—A. M. writes: Are stereoscopic views mounted as they are printed? Also, have argentic plates proved good?

A.—The prints from stereoscopic negatives should be reversed so that the left-hand picture is placed on the right upon the mount, and also to have the centers of the pictures not to exceed three inches apart. The argentic plates appear to work well in some hands; we have seen some excellent pictures made upon them, and at the same time we have also heard numerous complaints. Nevertheless we believe that if the instructions of the manufacturers are carefully carried out, and care is taken not to over-expose and use too strong a developer, good pictures can be made upon these plates. See BULLETIN, page 125, February, 1887.

Q.—C. H. incloses two prints and writes: Please let us know what is the matter with the inclosed prints? 1st. Can I get a sharp focus on a near object, as in the large print, and on a distant object at the same time; how is it done? Please tell me if there is anything right about this picture, and the cause of everything wrong about it. 2d. Do you consider the small print under- or over-exposed and fully developed; and can you give a rule to tell when the negative of such a print is fully developed or under-developed?

A.—You cannot get a sharp focus on close and distant objects at the same time; but you can get them very nearly sharp by focusing on some object half-way between and using a small stop in your lens. The trouble with the large print appears to be a want of toning and fixing; it is too badly discolored for us to pass a good judgment upon it. Better send us a good toned and fixed print. In the case of the small print it is both under- and over-exposed. The high lights are over-exposed, while the shadows lack detail from under-exposure. Arrange the subject so that the shadows receive some illumination as well as the lights, only very much less. Send us better toned and fixed prints of each picture and we can help you better.

Q.—A. E. R. writes: Please give, through the columns of the BULLETIN, a good formula for toning bath, and directions for using, also how to prepare the gold. Have had trouble (of late) with pictures not toning; silver bath fifty to sixty grains strong, just neutral. Have made new silver bath and different toning bath, but have the same trouble. Have cleaned out my dishes and I am very careful about hypo. Old reliable formulas have failed me. Does agate-ware affect the solutions, or where is the trouble? The pictures look all right before being put into the toning bath. I use a little acetic acid in first water.

A.—We think there must be some impurity in your acetic acid; try another kind. Also don't forget to fume the paper 30 minutes before printing, and print deep. If the weather is cold use a tepid toning bath. Read "Another Amateur's Experience in Toning," in Bulletin for February, 1886, page 43; also "Method of Making Gold Chloride" in Bulletin of March 26, 1887, page 167. We do not think the agate-ware affects the toning bath unless it is chipped off or cracked so that it is impossible to clean the dishes thoroughly. If you don't succeed with acetic acid, try making first wash water alkaline with a few drops of ammonia.

Q.—C. & H. inclose a sample of oxalate of iron and write:—Please let us know how to use it to make up a developer?

A.—Make a saturated solution of potassium oxalate and dissolve the oxalate of iron in it in the proportion of two drams (120 grains) to three fluid ounces of the saturated solution. The dissolving of the oxalate of iron may be hastened by heating the potassium oxalate solution, after which the mixture is allowed to cool and filtered ready for use. It is now full strength and must be diluted with water to suit the exposures.

Views Caught with the Drop Shutter.

We regret to note the death of Mr. H. D. Wilson, the father of Dr. E. L. Wilson, of the *Philadelphia Photographer*, and Mr. W. H. Wilson, of Wilson, Hood & Co. He passed away on May 19th at the ripe age of 86.

We recently had a pleasant visit from E. C. Landon, the well-known photographic supply merchant of Montreal.

Mr. Jacoby, the junior partner in the firm of W. H. Jacoby & Son, of Minneapolis, gave us a call on his return from Washington, where he has been with the military company from his city taking part in the competitive drill.

We regret to note the death of Mrs. E. K. Hough, the wife of the well-known correspondent of the Bulletin. We tender the bereaved husband our sincere sympathy.

Mr. Richard H. Moran has enlarged his place of business at 245 Centre street, New York, until he now occupies the entire building. By enterprise and attention to business he has built up a good reputation and we commend him to our readers.

The Canadian Government has recently raised the duty on foreign dry plates imported into Canada to thirty-five cents per square foot.

The A. M. Collins Manufacturing Company now make cards for mounting photographs that are muslin-lined and muslin-backed, which are excellent for the purpose for which they are designed. The pictures so mounted are somewhat limber and easily kept flat.

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Evening Post Job Print, N. Y.

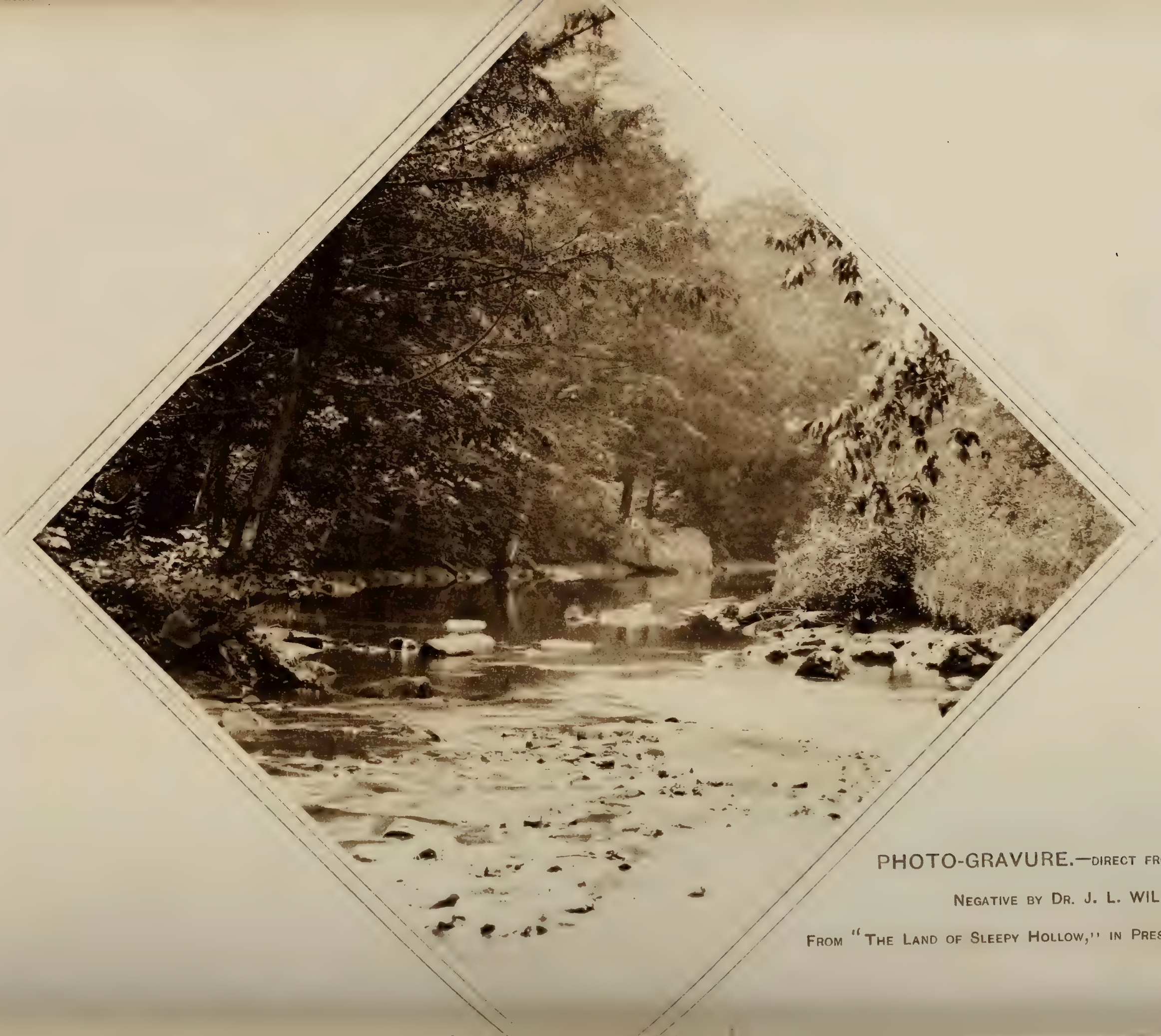

PHOTO-GRAVURE.—DIRECT FROM NATURE

NEGATIVE BY DR. J. L. WILLIAMS.

FROM "THE LAND OF SLEEPY HOLLOW," IN PRESS BY G. P. PUTNAM'S SONS.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JUNE 25, 1887. Vol. XVIII.—No. 12.

A NEW FIELD IN PHOTOGRAPHIC RESEARCH.

More than a year ago we gave our readers an account of the labors of Mr. M. Carey Lea in photography, and also a valuable communication from his pen on "Silver Lakes for Emulsion Plates." We now have to record the development of a new field of photographic research by this patient laborer in the experimental domains of our art. From ill health Mr. Lea had to abandon for many years the field of labor that he loves so well, but with the recuperation of his energies he returns to the work with a vigor that is truly surprising. There are few papers upon any chemical subject that contain such an amount of good hard experimental work as the one which we begin to reproduce in this issue of the Bulletin.* And the descriptions of the experiments here presented are of the same exhaustive character as those made by Mr. Lea during a period of many years when his name was familiar to every reader of chemical and photographic literature. His work in the line of chemical research alone puts his name in the front rank of chemists, and what photographer that is a student of his art has not often read and admired the photo-chemical communications of Carey Lea?

The nature of the photographic image was always a favorite subject for his pen and experimental work, and it is in a measure in the development of these ideas that he has been led to undertake the brilliant series of experiments that he now presents to the scientific photographer. The germ of the work now being recorded was probably the experiments on silver lakes that he described in the Bulletin of January, 1885. We little thought at that time that the work would lead to such important results. The photographic world should indeed be thankful that Mr. Lea has been spared to accomplish so much, and that his health gives promise of returning vigor.

Twenty-one years ago (just think of it) Mr. Lea made experiments in coloring the photographic film, and the work he then did has been confirmed and elaborated by such men as Major Waterhouse, Dr. Vogel, Professor Eder, Herr Plener and others. It was soon found that these coloring matters had a powerful affirmity for the silver haloids, and modified their action in relation to light. The compounds formed have a character somewhat analogous to those formed by the union of metallic oxides with organic coloring matters in the case of mordants. These are what may be called molecular combinations, the union of

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* See paper "On Red and Purple Chloride, Bromide, and Iodide of Silver."

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the molecules of the coloring matter with the molecules of the metallic base. Now similar combinations of molecules with molecules are also known between inorganic bodies, and we had a good example in the last issue of the BULLETIN in the compound in pitchblende, where two distinct oxides of uranium unite to form a third new combination. Other examples occur in the line of inorganic combinations, but this is sufficient to give an idea of the kind of compounds that have been submitted to experiment by Mr. Lea. These new combinations are formed by the union of two compounds of the same chemical elements, silver and chlorine, but having different proportions of the metal and halogen. They are the result of the union of the ordinary haloid silver compounds, chloride, bromide and iodide, with the corresponding compounds having a larger proportion of metal, and called by Mr. Lea subchloride, sub-bromide, and subiodide.

Although we do not altogether agree with Mr. Lea that these compounds deserve the names here given (subchloride, etc.), yet we are willing to admit that substances containing more silver than the ordinary combinations may exist, but up to the present time the evidence that they are definite chemical compounds is not of such a character as to amount to a demonstration of the fact.

These new colored silver haloids have been called by Mr. Lea photochloride, photobromide and photoiodide of silver, and consist of combinations of the so-called haloid subsalts of silver with the normal haloid salts, in proportions ranging from one to nine parts of subsalt in the hundred of the new photo compounds.

One of the most important results that has been obtained in these elaborate researches, is that the new photochloride of silver, which is a reddish-colored body, turns blue under blue light, violet with violet light; green has but little effect; yellow is sometimes faintly produced; and under red light the natural reddish color of the new compound becomes brighter and richer.

Here there seems to be the germ of a method of photography in natural colors, and in this particular direction we think is to be found the field for a rich harvest for future experiments in photography.

We strongly recommend our readers to carefully study Mr. Lea's papers, and the wonderful results there described will probably set some of them to work in the same direction.

EDITORIAL NOTES.

THERE is a good deal of discussion now going on in the English journals about processes for taking photographs in natural colors. As far as we can learn one of these is simply a novel method of coloring photographs, and is a device of Mr. Mayall, of London. He does not claim to take photographs in natural colors; but some of the English daily papers have heard part of the story, and concocted the rest in order to make up a sensational article. Nevertheless there is another scheme being talked about and pushed by some parties, probably interested in the starting of a stock company, in which they claim that colors are produced photographically. This latter scheme is being inaugurated under the auspices of a "Cellerier's Syndicate," as it is called, and actually professes to take photographs in natural colors. At present we have little faith in the reliability of this claim, but will keep our readers informed as soon as we can get any reliable information.

In our article on "Uranium Salts in Photography," we note an error that is not particularly important, yet it may lead to some tedious delays in working the method in which it is used, and we prefer to correct it. On page 322, line 25 from top, read ten grains of salt in the ounce of water, instead of "ten grains of salt in three ounces of water." A solution of the latter strength would work, but too slowly.

We have recently had an opportunity of seeing some contact prints and also some enlargements on the new gelatino-bromide printing paper now being manufactured by our publishers. We must confess that in general they are fully equal to anything we have hitherto seen, and in many cases surpass the best work done in this line in the past. The enlargements are particularly fine, having a wonderfully fine gradation of light and shade, and an artistic finish that is not equaled by any other method of photographic printing. Those of our readers who are interested in this new method of enlarging will find a visit to the Bulletin office quite interesting. Prints and enlargements can be seen here.

It is usually considered that photo-mechanical printing with gelatine is a process that can only be carried out in places where a moderate temperature can be maintained. Yet, through the kindness of Bernhard Eichelman, of Santiago, we have been presented with some examples of photo-gelatine work made by Diaz & Spencer, of that city, which are wonderfully fine specimens of this kind of work. By a careful study of the process, and expert manipulation, they are able to produce in South America work equal to that from the hands of those living in more northern and cooler latitudes. We must certainly congratulate Messrs. Diaz & Spencer upon these excellent specimens of their work, and the interesting subjects of the pictures.

Our readers must remember that there is only a little over a month before the meeting of the Photographers' Association of America in Chicago. Every one that intends to exhibit or compete for a prize should be at work getting ready now. The weeks will fly very rapidly and you will regret it, if you do not take some part in the coming Convention. Let us all do our best for the grand meeting and the success of it will become a personal satisfaction.

The question has been raised whether the competing exhibits at the Chicago exhibition may be mounted with a molding around them. Mr. Gentilé, the Local Secretary, says: "It is to be hoped that all competing will mount or have their pictures on boards so that they can easily be hung, and most certainly they can put molding around their exhibits." This is plain enough, and we hope the suggestion will be followed. A neat plain molding will give a little finish to the exhibit without distracting the judges in the estimation of the merits of the collection, but no gaudy or elaborate work of any kind should be permitted, and we don't think it will.

The English Photographic Convention is now a regular institution for the yearly gathering of British photographers. This year the meeting will be held in Glasgow on July 4th. There will be an exhibition; also meetings in the day and evening, and some six or more excursions. The Local Secretary is James

Davie, 36 Darnley street, Pollokshields, Glasgow, and we think that those of our friends who are traveling in England about that time will find it interesting to attend the Convention.

We regret to note the death of the venerable mother of Mr. Henry J. Newton, the President of the Photographic Section of the American Institute. She died at the residence of her son in New York on June 15th, at the advanced age of ninety-four years.

We are indebted to Mr. Thomas Bolas, the editor of the *Photographic News* for a set of seven pictures taken in the Criterion Theatre, of London, at night, and with only the illumination of the ordinary head-and foot-lights of the stage. These pictures were taken by Mr. John F. Roberts, an amateur photographer and member of the Camera Club. They are remarkably good pictures, and show to a striking degree the wonderful sensitiveness of the modern dry plate. The views represent seven scenes in the play of David Garrick, and are remarkably life-like pictures of the actors.

THE INTERNATIONAL ASTRONOMICAL CONGRESS FOR THE PRODUCTION OF PHOTOGRAPHIC CELESTIAL CHARTS, IN PARIS.

BY DR. J. M. EDER.

The Astronomical Congress, which convened at Paris upon invitation of the Paris Observatory and the French Academy of Sciences for mutual consultation in regard to the production of a celestial chart, was opened on the 16th of April at the Paris Observatory.

The governments of all the principal states, upon invitation of the French government, had sent their representatives. There were 58 delegates present from France, Austria, Germany, England, Italy, United States, Brazil, Cape of Good Hope, Sweden, Russia, etc. The Austrian government delegated Director Dr. Weiss and Professor Dr. Eder, from Vienna. From Germany: Professor H. C. Vogel, Dr. O. Lohse (Potsdam), Auwers (Berlin), Schönfeld (Bonn), Kruger (Kiel), and Steinheil (Munich).

The opening speech was made by the French Minister of Foreign Affairs, M. Flourens, who pointed out the significance and importance of the gigantic work to be commenced. He said: "The Congress is going to produce a celestial chart with the aid of photography which will contain, with precision, a greater number of stars than was hardly hoped for before; with the aid of photographic science the boundless number of unknown stars will be considerably reduced. The day of the opening of this Congress will be noted in the annals of science, or a new era had commenced for physical as well as mathematical astronomy. The first authentic page about the revolution and change of cosmic matter by way of astro-photography would now be written, that is, the history of the world."

M. Struve, Director of the Conservatory at Pulkowa (Russia), replied in the name of the Congress to the speech of M. Flourens.

Contre-Admiral Mouchez, Director of the Paris Observatory, was elected Honorary President; Director Struve, of Pulkowa, was elected President.

After these preliminaries the Congress commenced its labors, and accepted at first the general idea for the production of celestial charts; after that consultation was had about suitable means of execution. Two sections were formed: 1. The Astronomical Section (presiding officer, Professor Auwers, of Berlin). 2. The Astro-photographic Section (presiding officer, Professor Janssen, of Meudon). All resolutions passed in the several sections were finally submitted to the main meeting for approbation.

The next discussion was on the instruments to be used, and the application of refractors (with suitable glasses) was decided on. The use of reflectors was deemed impracticable, on account of the various difficulties opposing their application (small field of vision, great influence of temperature differences, etc.).

The application of uniform telescopes was decided upon. The lens-diameter fixed upon was 33 c.m. and the focal length 3.4 meters (in connection with the instruments of M. Henry, of Paris). A part of the heavens, which is equal to one degree, shall be reproduced upon a photographic plate. The lenses shall be made aplanatic for the region of the Fraunhofer line G, the photographic maximum of sensitiveness of the bromide of silver gelatine plates lying in the neighborhood of this line. The proposition to use concave glasses for the production of the sensitive plates for obtaining a larger field of vision was rejected as impracticable.

For the photographic view of the heavens, uniformly made bromide of silver gelatine plates shall be used, and two different exposures are to be made each time. One exposure with longer time, giving stars of 14th magnitude, and a shorter exposure giving stars only to the 12th magnitude; both may serve for the preparation of separate catalogues. By this proceeding, and the measuring of stars to the 14th magnitude, more than two millions of stars will be entered in the star catalogue, while the present catalogues contain only about half a million. Each star view must have the necessary marks upon the plate to determine the location of the photographed stars.

The astronomical scales are taken on the original negatives, these alone offering the necessary security.

It was recognized that the reproduction of original views for charts, etc., requires great care and preceding measurings about the correctness of the several methods; a definite final resolution about the manner of reproduction was not yet passed.

Very handsome photographic views of the heavens burnt in glass, being undoubtedly permanent, were placed before the conference, but the dusting-on process, applied for this, offers too little guarantee for a faithful production of every point, or the originating of strange spots. The writer spoke against this, by reason of his experiences with the graphite dusting-on process.

In regard to the photographic plates, the writer raised the question: "If, besides the ordinary bromide of silver plates, such as have been sensitized for the less refractive rays are also to be applied?" Several comparative astro-photographic views by Professor H. W. Vogel, of Berlin; Eugene de Gothard, of Herény; and photographic views of the solar spectrum, by the author, were placed before the meeting, showing the utility of these additions.

Director Weiss, H. C. Vogel, Dr. O. Lohse, Dr. Hasselberg, and the writer, offered a resolution recommending the use of color-sensitive plates for parallel experiments, besides the ordinary bromide of silver plates for astro-photography, which was sanctioned by the meeting.

The proper work of the several observatories will commence in from one to two years, the manufacturing of the instruments requiring a considerable time. The price of a photographic refractor of the prescribed dimensions is about forty thousand francs; but, notwithstanding the rather high expense, it is to be hoped that the governments in question will grant this amount to their observatories to take part in this great scientific enterprise, which will require the uninterrupted activity of fifteen years for those taking part in it.

Four observatories in France will participate iu the production of photographic celestial charts: Paris, Bordeaux, Toulouse, and Algiers. The representatives of the following states have also announced their participation: Austria, Germany, Russia, England, Italy, Portugal, United States, Brazil, and the Argentine Republic.

With particular satisfaction we have to mention that Director Weiss has promised the probable aid of the Vienna Observatory, favorable results of astronomical photography having already been obtained there without special in-instruments, and satisfactory for all requirements.

The necessary financial means for the production of a photographic refractor will undoubtedly be allowed, giving Austria also an opportunity to take part in the production of a celestial chart.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued.*)

Development.—This operation can be conducted in full daylight, for it is essential to be able to estimate the different degrees of developing in the picture. Proceed as follows: Place your table, provided with hot (Summer Queen stove or other contrivance) and cold water supply, conveniently. Prepare the alum solution and filter it repeatedly, as will be explained later on. Be sure that your hot water is boiling. Now take the first of the transferred papers and place it, tissue side up, into the developing tray and pour cold water upon it. The water must stand at least one inch deep in the tray. Rock it and be watchful to remove any air-bells which may appear, for if not removed they will most likely show later as black spots in the picture. Having soaked the papers, remove them, add some hot water, rock the tray to mix the hot and cold, and reimmerse the paper, continuing to rock the tray. Around the borders of the tissue paper will appear black lines, and by and by the tissue paper will lift from the transfer paper, which indicates that the gelatine of the former is sufficiently softened to allow of its removal, and this must be done with care, withdrawing the carbon paper holding it by one corner, with a steady motion, keeping both papers under water.

Having removed the tissue paper, there is now a black slimy mass of gelatine before your eyes. In gently rocking the tray, the water by degrees washes away all the gelatine which was not rendered insoluble by the action of the light, and the picture appears with all its contrasts, half-tones and high lights.

Should the development go on too slowly, some more hot water must be added, *always removing the print from the tray before each addition.* In case some parts of the picture should remain too dark, hot water may be locally projected upon those places, in which case its action will be mechanical.

Should water of 104 degrees F. not develop the picture, it indicates that the exposure was carried too far. In order to remedy this there are two ways, either to employ still hotter water (of say 112 to 115 degrees F.), or to add a few drops of liquor ammonia fortis. When properly managed the picture will come out all right. The development is finished when, holding it inclined, no more black particles are visible in the water which runs off. The picture is now rinsed with cold water of 60 to 70 degrees F.

If the exposure was right, and the negative not too thin, the picture on development will be very vigorous, with all desirable half-tones, but if the exposure was too short the deep shadows alone will appear, and the half-tones during development will be gradually washed away, and if the development is carried still further the entire image will disappear.

If the negative is too hard, the half-tones will disappear partially, and in such a case the only remedy is to take paper which had been sensitized two days before. This is the only recourse which the practical carbon printer has when a negative is too dense.

N.B. (1.) Never employ the same water for soaking the print which has served to develop or rinse a developed picture; always use fresh water. (2.) Over-print a little, and after soaking the prints in cold water use hot water by degrees up to 112 degrees F., and the prints will come out far more brilliant and with greater contrasts than if printed exactly to their photometric degree and developed with not such hot water. (3.) When, after soaking the print, too hot water is employed, small air-bells will form, which are rather tenacious, and unfortunately are not easy to get rid of. (4.) A good plan is to place the picture carbon side down, after removal of the tissue paper, and to allow it to develop automatically.

Failures.—The most frequent failure is the non-adherence of the tissue to the transfer paper, and during development the picture separates from the transfer paper. This is due principally to a too rich bath of bichromate, and very often happens during hot weather, the cause being that the tissue, during drying, becomes insoluble.

The strength of the sensitizing bath should be as follows:

Temperature from 68 to 76 degrees F.	3 per cent.
" " 76 to 86 "	2 "
" " 86 to 92 "	1 "

Another cause of failure is the formation of many little air-bells when separating the tissue from the transfer medium. This is due to the fact, that for the first soaking of the paper too hot water had been employed. The remedy is water of a lower temperature and longer soaking. The third failure is the so-called "reticulation," of which we shall speak later on in particular. A slight alkalinity of the developing water is favorable, since the gelatine is easier dissolved; however too much (expressly added carbonate of soda or ammonia) causes reticulation or makes the image granular. Acid water develops slower, but the pictures are finer and stronger.

Alum Bath.—This bath is composed as follows for single transfer:

Finely powdered alum	3 to 5 ounces.
Water	100 "

If the water should be calcareous, which would make the solution turbid, from 3 to 5 drops of sulphuric acid must be added. For double transfer the solution should not contain more than two per cent. of alum. This solution must be filtered repeatedly before use, and as long as it keeps clean may be used over and over again; however, it is better always to use a fresh bath.

The alum bath cannot be dispensed with, for it not only hardens the gelatine, but eliminates any trace of the bichromate which might still be present, and which, if not neutralized, would impart an ugly greenish color to the picture. The developed and well-rinsed pictures are placed for from 5 to 10 minutes in the alum bath, and afterwards for at least 30 minutes in a tray containing cold water, from which they are removed, rinsed again in cold water and hung up to dry. The carbon picture when dry loses all its relief, and becomes rather resistant to any rubbing; it even requires a little pressure to attack it with a scraper.

Reticulation.—Unfortunately very often during hot weather this trouble makes its appearance. The picture on development appears to be covered all over with a fine black net-work which destroys its delicate appearance, and (holding the picture horizontally against the light) looks as if it had lost all its gloss. This defect can be produced at will by the carbon printer, for it is only necessary to immerse the carbon paper, when effecting the transfer, in water of 88 degrees F. instead of cold water. Therefore to avoid it employ water of not more than 58 degrees F., and use an ample supply in the tray, always keeping the paper under its surface. The warmer the weather the cooler must the water be for the transfer operations. The addition of salicylic acid to the sensitizing bath, as indicated on page 294, has been recommended, and generally produces a good result. Too strong sensitizing baths during warm weather also cause reticulation.

Retouching and Mounting.—The retouching of the picture is easy. It is first rubbed over with finely powdered cuttle-fish bone. The stump should be charged with finely ground lamp-black and carmine, or, still better, *caput mortuum.* The scraper can be used to produce bright high lights. After successful retouching the picture is rubbed with a soft flannel tuft soaked in the following solution:

White wax	1 part.
Warm benzine	10 parts.

Do not use till cold. The pictures allow of being burnished and may be rubbed before or after; burnishing first and applying the wax lubricator later, gives a better result. The mounting may be done in the usual way on Bristol board, but care must be taken that the paste does not touch the picture side, for it would not be easy to wipe it off, since the carbon print when moistened becomes rather delicate. When in the right place cover it with a piece of stout paper and rub down well to insure good contact with the card-board.

DOUBLE TRANSFER PROCESS.

The lighting of the room, exposure of the tissue to the light, etc., are all the same as for single transfer, but as the picture comes right no reversed negatives are required. The entire process can be summarized as follows:

The exposed carbon tissue is placed in cold water; pressed on to a glass or porcelain plate, which has previously been rubbed with waxing solution; developed with warm water; passed through the alum bath; dried; again placed in cold water and pressed into contact with the double transfer paper, and, when perfectly dry, separated from the plate. This process furnishes pictures with a high gloss.

Ordinary glass plates can be used, but if really fine work is desired it is necessary to employ French glass of from 4 to 5 centimeters thick. Beginners do better to use opal glass, for, as it is white, the intensity of the print is far easier seen. It requires some practice to be able to estimate the strength of a carbon print on glass. Ground plates furnish prints which are "matt," *i.e.*, have a finely grained appearance. The carbon picture takes exactly the same character as the support employed, and special care must be used when selecting the plates, for any scratch or defect in them will show in the carbon print.

Larger sized plates offer a great advantage, for they allow of simplifying many of the operations, and it is just as easy to handle a 10 x 24 plate as a 10 x 8. Of course they require larger developing, transfer and alum trays.

Having selected a faultless plate, it is first well cleaned by means of caustic potash and some drops of liquor ammonia fortis, well dried and dusted, and then taking a small piece of flannel, which is slightly dipped into the waxing solution, made as already described, the plate is carefully rubbed all over. After 30 minutes it is laid flat on a board, and by means of a dry, clean piece of white flannel is polished. The polishing must be done with very slight pressure, in order not to rub off the wax, for if this should happen the picture would not separate from the plate. It is best not to polish new plates, but to employ them waxed alone. Be careful never to breathe on a plate while waxing or polishing. Should it be necessary to free it from the wax, rub with a piece of flannel well soaked in benzine. The plates which have been used for transfer do not require any more cleaning, the particles of collodion or tissue which remain on them can be scraped off with a flat table knife. Having waxed and polished the plates they are now left on the folding rack, being careful to protect them against dirt and dust.

(*To be continued.*)

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

Henry Peach Robinson, professional photographer, of Tunbridge Wells, formerly of Leamington, is known everywhere as a man who has put more art into his pictures than perhaps any living photographer. It is now some thirty years ago since H. P. Robinson resolved "to produce, at least one every year, something for photography, something to show the capabilities, and if possible, elevate the position" of the art he loved. This resolve has been nobly kept. His first composition picture of note, "Fading Away," appeared in 1858, and was succeeded by "Bringing Home the May." In 1878 his fine composition, "When the Day's Work is Done," was awarded the International Gold Medal at the Paris Exhibition, and altogether about eighty medals adorn Mr. Robinson's window at Tunbridge Wells, a pleasant inland Kentish watering-place. His success in exhibition pictures has been largely due to his power of selecting and posing his models, and to the great skill with which he combines several distinct negatives so as to give a single and harmonious print. Mr. Robinson is a skilled painter as well as photographer, and had a picture in the Royal Academy before he was twenty-one. Not the least service which he has rendered to photography has been the publication of the admirable books named on next page, which have done much to direct attention to the artistic side of photography.

1869. "Pictorial Effect in Photography: being Hints on Composition and Chiaroscuro for Photographers. To which is added a Chapter on Combination Printing." Small 4to. 199 pp. Illustrated. Piper & Carter. 7s. 6d.

New and cheaper edition, 1879. 12mo. 162 pp. Illustrated. Piper & Carter. 2s. 6d.

Second edition, 1880.

The framework of this book originally appeared in the *Photographic News.* The edition of 1869 is a handsome volume printed on toned paper, and copiously illustrated by the carbon photo-relief and phototype processes, silver printing, and by printing from etching and wood-engraving. The later cheap editions are indispensable to every one who desires to take pictures which shall be something more than maps.

1884. "Picture-making by Photography." 12mo. 128 pp. Illustrated. Four plates. Piper & Carter. 2s. 6d.

This book may be considered as a sequal to "Pictorial Effect."

1885. "The Studio and What to Do in It" 8vo. 143 pp. Illustrated. Piper & Carter. 2s. 6d.

Having built half-a-dozen studios for himself, and designed a large number for his friends, Mr. Robinson is justty considered an authority on the subject. The chapters on Posing and the Management of the Sitter embody the result of twenty-five years of daily work in the studio.

H. P. ROBINSON and CAPTAIN W. DE W. ABNEY.

1881. "The Art and Practice of Silver Printing." 12mo. 128pp. Frontispiece and 31 wood-cuts. Piper & Carter. 2s. 6d.

H. P. ROBINSON and — CHERRILL, of Tunbridge Wells.

1874 (?). "Portraits and Pictures Produced by Photography and Art." Pamphlet. 24 pp. Distributed by the authors to customers and friends.

This is a neat little pamphlet, in a dark green enameled paper cover, with the title, etc., printed in silver. The usual instructions as to dress, time of sitting, etc., are conspicuous by their absence, the firm probably feeling itself strong enough to deal with all contingencies.

JOHN RORKE, "author of a Treatise on the Use of the Globes; and formerly for many years English and Science Master in the Royal School of Dungannon" (Ireland).

1864. "Fancies on the Photograph: a Poem in Three Parts. Part I, The Triumph of Light; Part II, The New Temple of Fame; Part III, The Mysterious Photograph, a Dream." 12mo. 137 pp. Longmans & Co. 2s. 6d.

We must quote a few lines as specimens of the poet's work.

> "Light is the pencil this bright artist brings,
> Celestial light to sketch terrestrial things.
> Correct results upon his labors wait,
> With like effects he pictures small and great."

And again:

> "Once poets sang—and could not then sing more—
> 'Events advancing cast their shades before;'
> But now departing forms leave shades behind,
> And all we loved is spared to eye and mind.
> Be grateful, then, for such celestial aid;
> Time was man could not rescue e'en a shade."

JAMES ROSS.

1853. "Plain Answers to Common Questions regarding Photography." Edinburgh.

Messrs. Ross & Thomson were professional photographers in Edinburgh as early as 1847. For several years after 1849 they practised Niepce's albumen process with great success. The pamphlet named above was written for the use of their customers.

ROBERT ROUTLEDGE, B.SC.

1877. "Discoveries and Inventions of the Nineteenth Century." New edition, revised. 8vo. 594 pp. (Photography pp. 446–458). George Routledge & Sons, Ludgate Hill. 7s. 6d. Another edition was published in 1880.

MAJOR C. RUSSELL.

1861. "The Tannin Process." Foolscap, 8vo. pp. iv and 80. Illustrated. J. W. Davies, London.

Second edition, 1863. 135 pp. 2s. 6d. R. Hardwicke.

Appendix of 50 pages, and index, published 1865, both with second edition, and separately.

The tannin process was a dry plate process in which the collodion was bromized by means of bromides soluble in alcohol. It was then sensitized in the usual way in a bath of silver nitrate, then washed with water, and finally dipped in a solution of tannin, which acted both as a preservative and a varnish. These Russell dry plates were sold commercially. In connection with them Major Russell introduced the alkaline developer—consisting of pyro, ammonia, and a bromide—which is now so generally employed. The tannin process became popular, and Major Russell's book was translated into both French and German.

1866. "The Photographic Society and its Organ." Pamphlet, privately printed. Diprose & Bateman, 4 Clement's court, Carey street. 3d. This pamphlet refers to internal dissensions which troubled the Society at the time of its publication, and in which the gallant officer took an active part.

J. R. SAWYER. *See* Anonymous Publications, Autotype Co.'s Manual, 1870.

F. SCHUBERT.

1854. "Hints on Photographic Portraiture." 12mo. London.

CAPTAIN A. DE C. SCOTT and COLONEL SIR H. JAMES.

1860. "Photo-zincography." Pamphlet.

1862. "Photo-zincography and other Photographic Processes employed at the Ordnance Survey Office, Southampton, by Captain A. De C. Scott, R.E., under the direction of Colonel Sir H. James, R.E., F.R.S., etc. Published by permission of the Secretary of State for War." Royal 4to. pp. vii and 16, with 12 plates. Longman & Co. 12s. Second edition, 1863, has fifteen plates.

The Ordnance Office is a Government Department which is charged with the execution and publication of a series of maps of the British Isles. The work has been in progress for more than half a century.

(*To be continued.*)

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

As the time approaches for the holding of the Eighth Annual Convention of the Photographers' Association of America, the question naturally arises: "What are the prospects for success?" In answer I desire to say that the outlook is most promising, and a grand success is assured.

Communications are received daily from all sections of the country displaying a remarkable interest.

The arrangements of the Executive Committee have met with universal satisfaction, and the most excellent and liberal provisions made for the encouragement of exhibitors is stimulating photographers all over the country to the most active efforts in preparing specimens of their work for competition.

From observations which a recent extended trip has enabled me to make, and in conversation with photographers throughout the West and South, the greatest satisfaction is manifested at the new arrangement of class competition, and from the extensive preparation of work for the Convention, noticeable in a large proportion of the galleries visited, a most remarkable exhibition of photographic work may be expected.

I have received promises of exhibits from many photographers in Colorado, California, Texas, Louisiana, Georgia and Tennessee, and the probability is we shall be favored with some very beautiful studies from these localities. This, added to the usual magnificent displays from the Eastern and Middle States, cannot fail to make an exhibition surpassing all former conventions.

The two medals offered for foreign exhibits will doubtless induce many British and European photographers to make displays which, judging from former foreign exhibits, will afford much profit and pleasure to our members.

The awards will consist of thirty-three (33) medals in all, comprising one grand prize, diamond badge; eight gold, fourteen silver, and ten bronze medals.

The grand prize, diamond badge, with four gold and four silver medals of Class A, offered for the best exhibits in portrait photography, will give an unusual incentive to those ambitious to aim at the highest; to come to Chicago with fruits of their skill and labor. And the race for the diamond badge promises to be the most interesting of any competition in the history of our association.

For those with facilities for making large contact work, two special medals are offered, which ought to induce many to enter for Class B.

At former conventions many complaints have been made that the photographer of moderate means, and living at a great distance, had not a fair chance in competition with those capable of making extensive exhibits, the general attractiveness of which was usually greatly augmented by expensive and elaborate display of frames. This objection is entirely obviated by the rule which requires all competing exhibits to be displayed without frames or glass.

Class C, which provides for ten bronze medals, restricts the competitor to 24 cabinets, and as those competing in this are debarred from any other class, it will afford an opportunity for those who do not wish to make expensive exhibits to win recognition for the merit displayed in their work.

Intending competitors will be furnished with necessary entry blanks by applying to the Treasurer.

Mr. Gayton A. Douglass, Committee on Transportation, has secured exceedingly low rates. Where fifty or more can rendezvous at the same point, and purchase their tickets at the same time, the rate will be one fare for the round trip.

It is hoped that the stock dealers in the large cities will interest themselves in getting the necessary number to meet at prominent points. If these places of meeting are made known to photographers in the vicinity, or even within a radius of a hundred, or a hundred and fifty miles, accompanied with requests for replies from those intending to go to the Convention, the number can be ascertained beforehand and save any trouble at the last moment.

In case the required fifty cannot be got together, a rate of fare and a third will be required, the person buying a first-class ticket to Chicago and at the same time obtaining from the ticket agent a certificate showing that full fare has been paid; on presentation of this to the Secretary at Chicago, it will be signed, with which a return ticket can be obtained for one-third fare.

In addition to the association prizes, the following prizes will be offered for competition:

1. One Silver Cup, made by Tiffany, New York, value $250, presented by Blair Camera Company, Boston.*

2. $650 offered by the Eastman Dry Plate and Film Company, Rochester, N. Y.

3. Two air brushes, value $100, offered by The Air Brush Manufacturing Company, Rockford, Ill.

4. $100 offered by E. & H. T. Anthony & Co., New York.

5. Two Morrison Lenses, value $250, offered by Scovill Manufacturing Company, New York.

6. $100 offered by Stanley Dry Plate Manufacturers.

7. Two Beck Lenses, value $160, offered by W. H. Walmsley & Co., Philadelphia.

And now, brother photographer, what are you going to do toward insuring the success of our Eighth Annual Convention? Have you decided in which class you intend to compete; and are you keeping this in view in your every-day work? If not, rest assured it will pay you to do so.

Aside from the pleasure and gratification of winning medals of merit, the improvement in one's work which invariably follows the extra effort put forth under Convention stimulus, will well repay, in the increase in business occasioned by the higher standard of work, all the extra labor it may have entailed.

It is not difficult to pick out the Convention photographer from among his non-convention neighbors, and the wonderful improvement in the work and business prosperity of hundreds of our members should lead others to emulate their example.

Let us now have a grand rally at Chicago.

Fraternally,
H. S. BELLSMITH,
Secretary P. A. of A.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

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* We think this is a mistake; the cup is presented by Mr. T. H. Blair personally.—EDS.

COLOR-SENSITIVE METHODS AND HOW TO WORK THEM, WITH ESPECIAL REFERENCE TO ERYTHROSIN.

BY CHARLES EHRMANN.

(*Continued.*)

If we expose a photographic plate to the solar spectrum, these effects will show to perfection how differently the two ends of the spectrum work. Violet and blue will give very pronounced impressions, but they will diminish more and more, until, at the other end, no effect is visible. This is exactly the reason why so much difficulty was experienced when photographing the defenders of our country, as I mentioned at the beginning. With the Jersey cavalier the bright yellow hair and red face copied quite dark; so did the yellow trimmings and chevrons of the coat; while the somewhat faded blue coat showed up nearly white, and the light blue eyes gave two white, expressionless spots upon the almost black face; in fact, all through, only opposite effects to those desired or sought were obtained. How often highly-colored fabrics, ball-costumes, embroideries, bright golden hair, and freckled faces have given cause of dissatisfaction all around, a photographer only knows.

With color-sensitive plates we overcome these anomalies and produce effects nearly correct in their value of brightness.

For many years it was considered as impossible to remedy these defects, as we now think it to be out of the question to photograph colors themselves. An immense amount of practical work and labor had to be done before anything worthy of interest was attained, but we cannot deny that the discovery of the process is based absolutely upon theories, and has been established by experiments in spectroscopy. These experiments were based again upon one principle, viz., the addition of some substances possessing the power of absorbing and converting into chemical energy those rays which upon an ordinary plate have no effect.

For this purpose a large number of dye-stuffs were found to be most effective. They are themselves sensitive to light, for they bleach when exposed to it. Bleaching action was found to be strongest at the red end of the spectrum, which has no effect on ordinary plates. Dr. Vogel's most generally adopted opinion on this action is, that the energy absorbed in bleaching the dye is transmitted to the silver haloid of the plate, upsetting its equilibrium, and rendering it capable of development.

Of the many dyes that have been experimented with, only a few have been retained for their excellent activity, although many more are being added, according to the researches constantly made. It is true not all of these colors sensitize alike, or for several colors at the same time, and as the spectrum photographer proposes to examine distinct spectrum regions with distinct media, so does the practical photographer select colors that give the best general effect.

Some colors, known by the name of eosines, answer admirably, but many of them do not, and all of them refuse to reproduce red, beyond a certain point. A very happy combination of colors, belonging to another class, has been made, which show sensitiveness far into the regions of the spectrum red, by which pigment colors are rendered exceedingly well. This action is due to one of its ingredients, cyanin, or chinolin blue, the most red-sensitive substance known.

To obtain the best general effects in pigment colors, we employ another color. the erythrosin, also an eosine, or belonging to that group. With it the most practical results can be obtained, for it sensitizes to perfection up to orange, yellow, and green, giving at times quite correct reproductions of red, when not perfectly pure and partly mixed with other colors. And we find but rarely pure red, like some of the metallic oxides in pictures, fabrics or embroideries, hence erythrosin has been selected pre-eminently as a sensitizer for commercial plates or every-day work.

Occasionally cyanin in small portions is added to the erythrosin to obtain better red sensitiveness, and it acts then very satisfactorily in that combination.

Violets and blues will, even with those plates, exercise a very violent action, and, to suppress it, a ray filter, principally of a pure yellow color, is employed, it being placed between the objective and sensitive plate.

Mr. Ives, of Philadelphia, uses for his most excellent work, another coloring matter, chlorophyl, which is the green contained in the leaves of plants; but, as I propose to describe my own way of working, and since that of Mr. Ives is essentially different, we will leave it to later consideration.

At first, the color itself was incorporated with the emulsion, and with that the plates were coated. Practical work, and Mr. Plener, with his centrifugal machine, showed how but an extremely small quantity of color was requisite to give effects. In fact after an emulsion had been colored, he separated from it the bromide of silver, re-emulsified it, and, with the infinitesimal amount of color combined with the silver, obtained the same effects. All this led to the readoption of an almost forgotten process, the staining of ready-coated plates to color-sensitize them.

This way of working has become more popular than any other method, and although color-sensitive plates, colored in the emulsion, have become an article of commerce, stained, or bath plates, as they are commonly termed, seem to be preferred by most operators.

I have found erythrosin to be the most effective for general work. I have employed it in its original formula, as given by the illustrious Charles Scolik, of Vienna, and have used it in a variety of modifications.

Any good and sound gelatine emulsion plate, bathed in erythrosin solution, as it is now to be found ready prepared in the market, will work satisfactorily. The addition of cyanin does not cause difficulties, and with it there is no fear of fog. A bathed plate may be exposed wet or dry, and keeps intact much longer than it is credited for.

For the convenience of experimenters, practitioners, and amateurs, an erythrosin solution is now prepared which enables the operator to make any kind of gelatine emulsion plates sensitive for color.

In artificial light of sufficient force, such plates show the same general sensitiveness as the mother emulsion does in daylight, and therefore satisfactory results, with comparative short exposures can be had in gas, petroleum, or electric light.

THE ART OF MAKING PHOTO-GRAVURES.

By Ernest Edwards, *President of the Photo-gravure Company.*

[Read before the Photographic Section of the American Institute.]

Between the years 1790 and 1802, Wedgwood and Davy attempted to utilize for artistic purposes the sensitiveness of the salts of silver to the action of light.

In 1839, Mungo Ponton, of Bristol, in England, announced the action of light on organic matters, such as gelatine, in presence of a bichromate.

In the fifteenth century may be placed the discovery of copper-plate printing.

These three germs underlie the three essential elements of our process of photo-gravure, in which I am to endeavor to interest you to-night.

The first germ—that of the sensitiveness of the silver salts to light—is the one from which has sprung the photographic negative. The second discovery—that of the action of light on organic matter in presence of a bichromate—is the germ of the photographically-engraved or photo-gravure plate. The third gives the starting-point of plate or intaglio printing.

I propose to trace briefly the growth of these elements to the condition in which you see them to-night.

The efforts of Wedgwood and Davy, who, about 1800, projected on to a sheet of white paper, or leather, saturated with nitrate of silver, the shadow of the figure to be copied, the sun's rays darkening all but the shadow, were followed by the process of Niépce in 1814, who for the first time employed a camera, using bitumen or asphalt as the sensitive medium, and giving an exposure of some hours; then by the process of Daguerre, in 1839, where the development of the latent image first occurs, thus reducing the exposures from hours to minutes; later, by the discovery of Herschel, in 1821, of the value of the hyposulphites for fixing purposes, a very important step; next, by the production of negatives from which positives could be printed, by Fox Talbot, in 1839; and lastly, by the introduction of collodion, by Scott Archer, in 1851. It was this latter discovery that gave such an impetus to photography, so that it sprung at once into life as the new handmaid of art. For the next twenty or twenty-five years, the history of the collodion process was the history of photography. But the undisputed reign of collodion finally came to an end, and for the last ten years the history of photography has been the history of the gelatine process. Gelatine, indeed, has been the vehicle by which photography has been carried into well-nigh every home and well-nigh every business. Yet I think many of us older hands look back with longing eyes, in spite of the many advantages of gelatine, to the crisp snap of the collodion negative, which gelatine has not been yet harnessed to give.

If I may venture the prediction, I think the history of photography for the next decade will be the history of orthochromatic work. Surely, next to the production of the colors themselves, there is nothing to be desired so much as the rendering of the true values of these colors. I place the orthochromatic, or isochromatic, negative, as the highest point yet attained in negative-making, and as constituting the outcome to-day of that germ that was brought into being nearly a hundred years ago.

The story of plate printing, the second of the three elements in photo-gravure, and the method of printing by which impressions are produced from photogravure plates, is shorter and much less revolutionary. It is still in about the same state that it has been from its infancy. The same laborious, painstaking method of working is used as at first, and just about the same style of press. That other method of printing, type printing, starting later than plate printing, has sprung up and has grown from the old Caxton hand-press, printing a few hundred copies a day, into the modern power machine producing twice as many thousands an hour. Lithography has been born and grown to its present strength, but the old copper-plate press has not moved. No means have yet been devised to do the work of the ball of the hand, and just as assuredly no results have been obtained approaching the exquisiteness of the steel or copper-plate engraving.

In plate, or steel-plate, or copper-plate printing, the design to be printed is cut or incised into the surface of a steel or copper plate. This plate is dabbed all over with ink, which fills the incised lines and covers the surface as well. The ink on the surface is wiped off with cloths and the hand, leaving only the ink in the incised lines. Paper placed on the plate, after heavy pressure has been applied to the back of it, when lifted withdraws the ink from the lines, leaving the design, which was on the plate, adherent to the paper.

The most probable origin of the art of printing from metallic intaglio plates is that which is attributed to the early Italian workers in niello, or inlaid modeling work, an art used for ornamenting table utensils, swords, armor, etc. This art consisted in cutting or engraving the required design on silver and filling up the incisions with a black composition said to be made of silver and lead, which from its dark color was called by the ancients nigellum, abbreviated by the Italians into niello. This mixture, when run into the engraved lines, produced a regular effect of *chiara oscuro* in the entire work. From these engraved plates or objects, the artists in niello, who were the goldsmiths and silversmiths of that period, were accustomed to take impressions by smoking the metal, and then after cleaning the smooth surface with oil, impressing upon it a piece of damp paper. From such an original undoubtedly came the art of chalcography or plate printing, and it is equally certain that the art of engraving with the burin, or as it is now called "line engraving," arose in the workshops of the gold and silversmiths. Not very long after the discovery of plate printing, the engravers, separating themselves from the manufacturing goldsmiths and chasers, formed themselves into a distinct body, opened schools for pupils, and took up their rightful position among the artists of the time.

Thus in the fifteenth century, that century so prolific of art and knowledge, was brought forth the art of plate printing, and it is almost wonderful the little change that has occurred in its methods from that day to this, a period of nearly five hundred years.

It is perhaps unnecessary to describe the press used in plate printing, as you have one before you. It consists, as you see, of two rollers of iron supported in a strong iron frame and movable at their axes. One of these rollers is placed just above, and the other immediately below, the plane or table upon which the plate to be printed is laid. The plate being inked by a printer's inking roller, an operation requiring great care, the paper which is intended to receive the impression is placed upon it and covered with two or three folds of soft woolen stuff like blanketing. These are moved along the table to the spot where the two rollers meet, and the upper one being turned by the arms fixed to the upper roller, the plate passes through it, conveying the impression as it moves. The print is then taken off the plate, which has to undergo the same process of inking for the next and every succeeding impression.

Of the various methods of engraving on metal plates—etching, line, mezzotint, chalk, stipple and aquatint—it is not advisable to speak to-night, but the mention of them brings us directly to trace the development of that third germ which has culminated to-day in the photo-gravure plate: a photo-mechanically prepared plate which gives, without injury to its surface, many thousands of impressions of such subjects as I have the pleasure of submitting to-night.

Concurrently with the time that the sensitiveness of the salts of silver to the action of light was being developed into what I may call photography proper, another action of light had been discovered, and was being utilized in the application of photography to commercial and publication and permanent purposes. The action of light on certain salts of silver is to darken them. The action of light on organic substances, such as gelatine, in presence of a bichromate, is to render them insoluble in water; to make them non-absorbent of water; to prevent them swelling, therefore, when soaked in water. This was Mungo Ponton's discovery in 1839. In 1852, Fox Talbot utilized it for a process of etching, and in 1855, Poitevin, in France, patented its use for several purposes: first, for a process of carbon printing; again for a process of photo-lithography; and still again for a process of photo-gelatine printing. If we take a sheet of gelatine to which has been added a bichromate, and expose it to light under a photographic negative, it will be found that where the light has acted the gelatine will no longer absorb water; will no longer swell up; will no longer dissolve in hot water. That part of the gelatine which was protected by the negative continues to absorb water; continues to swell up; continues to dissolve in hot water. Those parts where the light has partly acted partly absorb water; partly swell up. Thus we are able to make a picture, not in light and shade, but in relief and depression. This process, broadly, in some shape or other, twisted about in a variety of ways so as to suit varying circumstances, is at the bottom of all the practical methods of photo-mechanical printing and of photo-gravure.

Now let us consider for the moment what are the conditions necessary to be secured in a metal plate made by photography and suitable for plate printing. In the case of a subject in line, only an incised line or groove must be made below the surface of the surrounding metal. The ink is dabbed or rolled into such lines, and the surface of the plate cleaned with cloths and the ball of the hand, leaving the ink only in the incised lines. This ink is transferred to paper by pressure, and becomes the impression. This is all well enough in case of lines only, but it is clear it will not be sufficient where there are masses of shadow or half-shadow. The cloth, or the hand, will wipe away the ink from these masses of shadow unless something is done to prevent it. Of course, in line-engraving a series of lines may be made which forms a shadow, each of which series has an ink-holding capacity, and out of which the ink cannot be wiped. The closer these lines are together, and the deeper they are, the stronger is the shadow produced, because the smaller is the amount of surface to be wiped clean. Again, to go a step further, a series of lines may be incised or engraved on a plate, and at right angles to these a similar series. In this way, assuming that the incised lines are V-shaped, nothing will be left of the surface of the plate but a series of points, each of which is the apex of a pyramid and each of which prevents the cloth or the hand from wiping the ink out of that portion of the plate surrounding it. This is the essential cardinal feature of a plate for plate printing, and this is the essential cardinal feature which must be obtained in any photographically-produced plate of a similar kind. Whether formed in the way I have described, or whether the plate is honeycombed with a series of cells, of which the walls reach to the surface of the plate, there must be an ink-holding capacity to the plate, which must not, therefore, simply be a plate in relief and depression. If such only were needed, it would be easy enough to make, by means of gelatine and bichromate, a picture or matrix in relief and depression from any photographic negative, and deposit copper on it till thick enough to print from. But such a plate would have no value, as it would have no ink-holding capacity, and therefore all the ink would be wiped out of it in the process of cleaning. Some device must be obtained by which this ink-holding capacity, or grain, as it is commonly called, shall be given to the plate. The solution of this problem has been sought by an army of experimentalists, and numberless ingenious devices have been utilized in order to solve it. It may be broadly stated that the production of a grain which shall be effective for the purpose, and yet shall not be apparent in the finished picture, is the keystone of all methods or processes for making successful photo-gravure plates.

(*To be continued.*)

[*From the American Journal of Science.*]

ON RED AND PURPLE CHLORIDE, BROMIDE, AND IODIDE OF SILVER—ON HELIOCHROMY, AND ON THE LATENT PHOTOGRAPHIC IMAGE.

BY M. CAREY LEA, PHILADELPHIA.

PART I.

IN this series of papers it will be my object to show:

(1.) That chlorine, bromine, and iodine are capable of forming compounds with silver, exhibiting varied and beautiful coloration, peach-blossom, rose, purple and black; that these compounds (except under the influence of light) possess great stability; that they may be obtained by purely chemical means, and in the entire absence of light.

(2.) That of these substances the red chloride shows a tendency to the reproduction of colors. It seems not improbable that the material of the infinitesimally thin films obtained by Becquerel, Niépce de St. Victor, Poitevin, and others, in their experiments on heliochromy, may be the red chloride.

(3.) That these substances, formed by purely chemical means, constitute the actual material of the latent or invisible photographic image; which material may now be obtained in the laboratory without the aid of light, and in any desired quantity. They also form part of the visible product resulting from the action of light on the silver haloids.

For more than a generation past the nature of the latent photographic image, that which forms the basis of development, has been in dispute. Two theories have been maintained. According to the one, the first effect produced by light is simply a physical change, predisposing the elements of the silver haloid to dissociation; so that when a reducing agent is applied, the molecules so affected yield more quickly to its influence. According to the other theory the invisib image is formed of a subsalt (subchloride, etc.) Observations which I pu lished many years ago led me strongly to the first-mentioned of these theories, but of late years results have been obtained not easily reconcilable with it. On the other hand, the theory that the latent image is formed of subsalt is opposed to striking facts. Silver subchloride, for example, is an unstable substance, quickly destroyed by dilute nitric acid. But I have formed a latent image on silver chloride, and after exposing it for five minutes to the action of strong nitric acid (sp. gr. 1.36) have developed the image without difficulty; the same with silver bromide. Evidently these images, which so strongly resisted the action of undiluted acid, could not be formed of simple subchloride and sub-bromide of silver, substances quickly destroyed by it.

In the desire to find a satisfactory explanation of the nature of the image based on adequate chemical proof, I have devoted nearly three years of laboratory work to this and to closely allied subjects. I am led to the conclusion that neither of the older views is correct.

A truer theory seems to be deducible from the result of some experiments which I published in 1885, to the effect that the silver haloids were capable of uniting with certain other substances, much in the same way that alumina forms lakes.* When a silver haloid was precipitated in the presence of certain coloring matters, they combined with it, and though soluble in water, they could not be subsequently washed out. They had formed a somewhat stable compound, although the proportion of coloring matter was very small in comparison with the haloid; evidently much too small to represent a stoichiometrical composition.

Now I find a silver haloid may, in the same way, unite with a certain proportion of its own subsalt, which, by this union, quite loses its characteristic instability, and forms a compound of great permanence.

Another explanation is possible. The subsalt may combine with the normal salt, not in the manner above described, but in stoichiometrical proportion, and this compound may be diffused through ordinary silver haloid. I have not been able to find any reaction decisive between these explanations,† but the general behavior of the substance seems rather to indicate the first-named explanation as the true one. When the red chloride, for example, has been boiled with dilute nitric acid for a few moments to eliminate any uncombined subchloride, the proportion of subchloride left has never exceeded eight or nine per cent. in over thirty specimens analyzed. If we took this to represent a compound in equivalent proportions, we should have to suppose the union of at least twenty equivalents of $AgCl$ with one of Ag_2Cl, which is improbable. If we suppose that these colored substances, containing from less than one-half per cent. up to eight or nine per cent. of Ag_2Cl, consist of a compound of one equivalent of subchloride united to a small number of equivalents of normal chloride, then it would be improbable that specimens could not be obtained containing a larger proportion of this compound, and consequently of Ag_2Cl; but, as already said, specimens containing more than 9 per cent. after thorough treatment with nitric acid to remove the uncombined subchloride, I have never obtained; generally the amount is less.

Even when silver chloride, bromide, or iodide contains as little as half of one per cent. of subsalt combined, its properties are greatly changed. It has a strong coloration, and its behavior to light is altered. Even a much less quantity, one inappreciable to analysis, is capable of affecting both the color and the behavior to light.

It is one of these latter forms of this substance that constitutes the actual material of the latent photographic image; adequate proof of this will be given in the second part of this paper.

RED SILVER CHLORIDE.

Of the three haloids, the chlorine salt is the most interesting, because of its relations to heliochromy; it is also the most stable of the three compounds, and exhibits perhaps a finer variety of coloration, though the bromide and iodide are also obtainable of very beautiful tints. The chloride shows all the warm shades from white to black through the following gradations: white, pale flesh-color, pale pink, rose-color, copper-color, red-purple, dark chocolate, black.

These compounds are obtained in an endless variety of ways: by chlorinizing metallic silver; by acting on normal chloride with reducing agents; by partly reducing silver oxide or silver carbonate by heat, and treating with HCl; by forming suboxide or a subsalt of silver, and treating with HCl followed by nitric acid; by acting on subchloride with nitric acid or an alkaline hypochlorite, etc. By attacking almost any soluble salt of silver with ferrous, manganous, or chromous oxide, etc. By reducing silver citrate by hydrogen, and treating it with HCl; by treating a soluble silver salt, or almost any silver solution, with potash or soda, and almost any reducing agent, cane-sugar, milk-sugar, glucose, dextrine, aldehyde, alcohol, etc., and supersaturating with HCl; there is no organic, easily oxidizable substance that I have tried that has failed to give this reaction. Also almost any salt of silver exposed to light, treated with HCl, and then with hot strong nitric acid, yields it. Almost any of these classes represents a long range of reactions, each susceptible of endless variation. In fact the more the matter is studied, the more extended the range of reactions is found to be that give rise to the formation of this substance. To show how slight an influence will lead to the production of red chloride instead of white, if freshly precipitated argentic oxide is mixed for a few moments with starch or tragacanth paste, and is then treated with HCl, the result is not white, but pink silver chloride. Even raw starch-flour mixed with silver oxide will in a few moments cause it to give a pale flesh-colored chloride with HCl. Boiled starch or tragacanth paste does this more quickly and acts more strongly, even if cold, and still more if heat is applied.

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* See BULLETIN, Vol. XVI, page 5.

† Silver chloride may be dissolved out by hot solutions of sodium or ammonium chloride, but the subchloride is at the same time decomposed. See beyond, under head of "Reactions."

Although red is probably the most characteristic color of this substance, so that I have spoken of it above as red chloride, nevertheless this hardly seems a proper name for a substance that is often purple, chocolate, or black, sometimes brown or even ocherous, sometimes lavender or bluish, and is probably capable of assuming every color of the spectrum. To call it argento-argentic chloride would infer a stoichiometrical composition that, as already mentioned, seems very uncertain, too much so to serve as the basis of the name. Therefore, and as these substances have been hitherto seen only in the impure form in which they are produced by the continued action of light on the normal salts, it might be convenient to call them photosalts, photochloride, photobromide, and photoiodide, instead of red or colored chloride, etc., and thus avoid the inexactness of applying the term red chloride to a substance exhibiting many other colors.

Photochloride by Action of Alkaline Hypochlorites.

Black, or purple-black, chloride is easily obtained by the action of an alkaline hypochlorite on finely-divided silver, such as is obtained by reduction in the wet way. Commercial sodium hypochlorite may be used to act on it. It is to be poured over the silver, and, after standing a few minutes, is to be replaced with fresh. After an hour or two this is again to be replaced with a new portion, which is to be allowed to act half an hour to insure the total conversion of the silver. The product varies somewhat in color, is sometimes black, oftener purple-black. If the treatment of hypochlorite has been thorough, strong cold nitric acid of 1.36 sp. gr. extracts from it no silver. This reaction with nitric acid is important, as it shows that not only metallic silver was not present, but that the product contained absolutely no uncombined subchloride; for if any were present it would instantly be decomposed by the acid, in which one-half of its silver would dissolve. The action, therefore, appears to take place in this way. First, subchloride is formed; part of this is further chlorinized into normal chloride, which at once combines with other subchloride, thus taking it out of the further immediate action of the hypochlorite, and this goes on until an equilibrium is reached, and neither metallic silver nor uncombined subchloride is left, as is proved by the action of nitric acid. Alkaline hypochlorite, as will presently be shown, attacks uncombined subchloride very rapidly, the combined very slowly. By many days' contact the quantity of combined subchloride is gradually reduced.

Prolonged treatment with hot strong nitric acid destroys all the varieties of photochloride. The time needed varies a good deal. A specimen of that obtained with hypochlorite required twenty-five hours' heating with acid of 1.36 in a water-bath at 212 degrees F. to bring it to the condition of white normal chloride. Considering that cold dilute nitric acid instantly destroys freshly precipitated argentous chloride in the free state, this long resistance to strong acid at that temperature of boiling water must be considered most remarkable.

When the red or photochloride is formed with the aid of a ferrous salt or ferrous oxide, I prefer to boil the product with dilute HCl to get rid of the last traces of iron, after a preliminary treatment with hot dilute nitric acid has removed silver and uncombined subchloride. The photochloride will sometimes even resist boiling aqua regia for a time.

Protected from light, photochloride is perfectly stable. Specimens obtained eighteen months ago appear to be quite unchanged.

When treated with ammonia it is far more slowly attacked than the normal. The ammonia dissolves the normal chloride only. The union between the two must, therefore, be broken up, and this takes place slowly. The first action of the ammonia is to change the red or purple color to greenish-black, and then to slowly dissolve out silver chloride. Hours are required, even with a large excess of ammonia. Whilst this is going on, if the ammonia is poured off and replaced with nitric acid, the original color reappears. If the action is continued sufficiently long, silver only remains, and dissolves readily in nitric acid. A little short of this treatment with nitric acid leaves a black residue of dark chloride mixed with metallic silver; the dark chloride being insoluble in any acid has led to some strange mistakes in a similar reaction which occurs in treating with ammonia, silver chloride that has been exposed to the light. Even a theory has been had recourse to of a "passive condition" of silver. This passive silver is simply black chloride.

A specimen of purple-black chloride was treated with warm strong aqua regia until whitened by conversion of the subchloride to normal.

By this treatment 2.563 grams of photochloride gained nine milligrams, indicating the presence of $2\frac{1}{2}$ per cent. of subchloride, or, more exactly:

Subchloride	2.49
Normal chloride	97.51

This is not to be taken in any sense as representing a constant composition. The proportion of subchloride varies between certain limits, not only according to the method of preparation used, but independently of it. Another specimen of black chloride formed with hypochlorite gave figures that indicated a content of less than half of one per cent. of subchloride.

PHOTOCHLORIDE BY REDUCTION OF NORMAL CHLORIDE.

This is an excellent means of obtaining red chloride. The white chloride is to be dissolved in ammonia and ferrous sulphate added, producing an intensely black precipitate. After standing a minute the mixture is to be treated with dilute sulphuric acid until it shows a strong acid reaction.

The precipitate is to be first well washed by decantation, then boiled first with dilute nitric, then, after washing, with dilute hydrochloric acid, which must of course be thoroughly washed out.

The product obtained in this way is often of singular beauty. It might easily be taken for metallic copper, Sometimes it is as rich and bright in color as the copper obtained by electric deposition. Every one knows the richness and brilliancy of that form of copper, and I have seen it fully equaled by this silver salt.

The beauty of the color depends always on the thorough removal of any metallic silver that may be present, and still more in getting rid of any trace of iron. The boiling with dilute hydrochloric acid should be continued until, after thorough washing, a fresh treatment extracts no more, and the acid remains colorless in presence of alkaline sulphocyanide.

Instead of an ammoniacal solution of silver chloride, we may make a solution of any other silver salt in ammonia, and reduce it in the manner just described with ferrous sulphate. But in this case hydrochloric acid must be used instead of sulphuric after the reduction. This single reaction includes an almost endless variety of methods. The acid with which the silver was originally combined seems to be not without influence in the result; in some cases, for example, with arseniate and molybdate, the action of colored light on the red chloride seems to be somewhat modified. Silver phosphate, on account of the ease with which it suffers reduction, is very well adapted for this treatment.

(*To be continued.*)

AN AMATEUR ON DEVELOPMENT.

To the Editors of the BULLETIN.

I HAVE just passed through my first experience in developing portrait negatives which had been exposed under a sky-light. My object being to make a composite picture embodying nearly one hundred individuals, I procured a number of Stanley plates, had them exposed by a local photographer, and with considerable trepidation entered upon the task of developing them. Looking over the result, I would like to ask professional photographers how it is that they ever make a failure in developing. These plates were given a very full exposure—an average of about five seconds on two cloudy days—and in every instance the negative was almost faultless. I attribute the success to three causes: (1) the uniform excellence of the plates; (2) the proper exposure given each; and (3) a very careful development. Every negative showed a clear gray color and marvelous definition, with even the darkest portions as transparent as stained glass.

I have ten days' vacation now and would like no better fun than developing a lot of portrait negatives. The latitude of failure is infinitely narrower than with a landscape view. Hereafter I shall have no sympathy with the professional photographer who shows me a fogged portrait. I again affirm that he has literally no excuse for bad work. He is familiar with the emulsion used; he cannot fog his plates by direct sunlight on the leaky camera; custom has taught him the proper diaphragm for use; he knows to a second the average exposure; and if he has any skill at all in developing, a perfect negative should always result.

I need hardly say that I used the modified Hoover developer, which I have already described in the BULLETIN. I still regard it as the most uniformly excellent of any I ever tried. To test its capabilities I gave two Stanley plates skylight exposures of five and thirty seconds, and I defy any expert to tell which of the two received the tremendous exposure.

Yours truly, E. L. FRENCH,
Secretary Postal Photographic Club.

PHOTOGRAPHING THE PRESIDENT.

To the Editors of the BULLETIN.

SEEING under the heading of "Views Caught with the Drop Shutter," something about photographing the President, I thought I would give a bit of my experience.

When the President came to Deer Park on his bridal tour, there was great excitement in our town—every person wanted to see him, and although his cottage was guarded by detectives, I ventured to try to photograph it. Arriving at Deer Park I asked some workmen which was the President's cottage. The man that showed me said he was afraid some one would see him, and he took me around the hotel and through the woods, and told me I would not dare go over a certain place, and said I must get behind the little church (that was in the grounds) and be very careful. I went and got the picture, and as I could not get near enough to get a good view of it from where I was, and I was not sure that the man had told me right, I went around the church to the bridge where the detectives were (I did know they were detectives then), and asked them if that was the house the President occupied, and they replied it was, and asked me what I wanted. I told them, and they said that I could not take a photograph of it without orders. I quietly left them, with the happy thought that I had gotten one without their knowing it. I developed it when I got home, and found it to be as good a negative as I had ever taken.

In a few days it was decided by the President that he should go to Deep Creek on a fishing excursion. I made up my mind that I would follow him with my "dry plate gun" to see if I could get him up to his knees in a trout stream; but when we got down we found the President had retired to the house of Fish-Commissioner Delander. Although we hung about the undergrowth like bushwhackers, we were unable to catch him out any more. I determined that the only way to catch him was to set my camera by the roadside, where he was compelled to pass, and "fire" at him as he went by. I did so, and upon developing the plate for two or three hours (more or less), I found I could get nothing out of it, so I was bound to let it go. The day was cloudy, and I think my diaphragm was too small, was the reason I could get no good results; but my other photographs of places where he stayed and visited, were good. I sent four of the pictures to Mrs. Cleveland after her return to Washington, and received the following note in her own handwriting. F. O. B.

Executive Mansion, Washington.

Mr. B——Please accept my thanks for the photographs of the familiar places in and about Deer Park.

They show the hand of a good photographer.

Very truly, FRANCES CLEVELAND.

OUR ILLUSTRATION.

THE beautiful example of photo-gravure which we give as an illustration in this issue of the BULLETIN, is an excellent accompaniment to the instructive paper by Mr. Ernest Edwards on "The Art of Making Photo-gravures." All the beauties of the process are there ably discussed, and we heartily recommend our readers to study that most interesting *resumé* of photo-mechanical printing.

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

THE Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A cash prize of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

W. H. WALMSLEY'S PRIZE.

W. H. Walmsley & Co., of Philadelphia, offer two prizes for competition at the Chicago Convention.

First Prize.—For the best portraiture, from cabinet to life-size, made with Beck's "Autograph" Lenses of any size, not smaller than No. 6, one "Autograph" Lens No. 7, of the cash value of $100.

Second Prize.—For the best work, other than portraiture, such as landscapes, architecture, interiors, etc., made with Beck's "Autograph" Lens of any size, one No. 5 "Autograph" Lens, of the cash value of $60.

PENNSYLVANIA ASSURANCE.

To the Editors of the Bulletin.

I suppose all photographers have an occasional queer customer, but for pure unadulterated gall commend me to a woman in this town. She told the story herself, so it must be true.

Eight years ago a couple were married and visited a neighboring town on their wedding tour; while there they visited the resident photographer, and each had a 4-4 picture made. That of the husband proved satisfactory, but the wife did not like hers. As they had left town before the pictures were finished, there was no chance to sit again, but the knight of the camera promised by letter to give the lady another sitting any time she might visit his gallery. About a month ago the lady did visit the town again, this time accompanied by her seven-year old son. She had no picture of the boy, and remembering the offer of the photographer, visited him and reminded him of his promise, made eight years before, and self-denyingly suggested that, as it could not matter to him whose picture he made, she would prefer a photograph of her son rather than of herself.

The boy was photographed and the debt (?) canceled. But if any one can match this for assurance I would like to hear it.

A foreigner visited my gallery the other day, and when asked what style of picture he desired, drew himself up to his full height, with his hands glued to his sides, and replied, "I'd like to be drah'ed wid me feet." J. B. Readman.

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

ON THE ACTION OF DIFFERENT COLORING MATTERS UPON THE BEHAVIOR OF BROMIDE OF SILVER IN THE SOLAR SPECTRUM.

BY DR. J. M. EDER.

(From Original Memoir of the Author.)

(*Continued.*)

Indulin.—Under the name of indulin, several blue, violet-gray to black coloring matters are placed on the market which not only bear a similarity to each other in regard to their employment for dyeing purposes, but also in their general chemical condition. They are partly soluble in alcohol, partly in water. The latter are mostly soda salts of sulpho-acids of the alcoholic indulins; they change very little with acids and are partly constant against alkalies. With ammonia the blue color becomes mostly red-violet. In the absorptimeter these coloring matters can be distinguished.* Their sensitizing action upon bromide of silver gelatine is, with equal concentrations, characteristically different, so that upon this also a classification of the indulins could be based with the aid of the spectrograph if the distinct form of the maximal actions with changing concentration did not deviate.

The indulins soluble in alcohol will not stand any ammonia. I apply them as baths for bromide of silver plates by dissolving one part of coloring matter in 400 parts of alcohol, and add 5 to 12 c.c. to 100 parts of water. In the same concentration I produce the pure aqueous solutions of the water-soluble indulins, and add to the preliminary bath one-half per cent. of ammonia.

1. *Indulin which effects no distinct sensitizing maximum upon bromide of silver.*—To this belongs an indulin soluble in water which I acquired from Dr. Schuchardt, of Gorlitz, and which, according to the manufacturer, was produced by melting amidazobenzol with aniline, and sulphonizing the product so obtained. By mixing with rose-aniline blue, the blue-gray color of this indulin is frequently made a brighter blue for the market.

This coloring matter depresses the total sensitiveness of bromide of silver towards white light. With sufficiently rich illumination in the spectrograph, there appears, besides the normal spectrum picture, a weakly increased sensitiveness for the rays from E to H.*

Behind a chrysoidin screen the Fraunhofer lines will appear very sharp in spectrum photography. I applied the coloring matter as a bath with the concentration 1 to 4,000 to 1 to 10,000. The addition of ammonia is favorable.

2. *Bleu Coupier, and similar kinds of indulin produced after the nitrobenzol process, with a distinct sensitizing maximum in orange.*—Bleu coupier is an indulin (nigrosin, violaniline) which is produced by heating nitro-benzol with aniline hydrochlorate, with addition of a little iron, chloride of iron, or chloride of zinc.

Already in the year 1884 I described the action of this coloring matter in the following words: "Bleu coupier effects a sensitizing with the less refractive rays which deserves observation for showing two maxima, one in green, the other in orange, at D ½ C." †

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*The detection of indulin from its absorption spectrum is, according to my examination, a surprising one. As soon as sufficient material has been collected to base a general conclusion upon, more exact explanations can be given.

*The action of the sensitiveness decreases towards the red end of the spectrum. Sometimes I observed a very indistinct maximum of the sensitizing in green that could hardly be seen.

† "About the Behavior of the Haloid Compounds of Silver," etc. (Report of the Imperial Academy of Sciences, Part II, Vol. XC, December, 1884.) See BULLETIN, Vol. XVI.

If this coloring matter is applied as an aqueous bath (2 to 6 c.c. of a solution 1 to 400 in 100 c.c. water, with ½ to 1 per cent. of ammonia), the maximum in orange will appear stronger (the average of the maximum upon the photographic spectrum picture lays at $\gamma =$ 623 mm. wave length). Still there is a weak sensitizing action observable for the whole less refractive rays till above A, which appears particularly by application of yellow screens (*e. g.*, chrysoidin solution). The part from D to C (or B) is particularly visible, while the action in the infra-red is weaker. (The action of this coloring matter at shorter or longer exposure is shown in Curve III, see Fig. 1, page 313.) The behavior of other kinds found in the market, and produced after the nitrobenzol process, is quite analogous in the spectrograph. The characteristic maximum is always between C and D.*

Another kind of violaniline I received through the kindness of Dr. Keller, of Biebenrich. The preparation was produced by the action of nitro-benzol, aniline, aniline hydrochlorate, and chloride of iron or zinc. The alcoholic nigrosin originating was sulphonized, and, according to the desired blue shade, made blue with waste from aniline blue (which in the manufacture remains dissolved in the aniline hydrochlorate, and is precipitated with much water and sulphonized). In this case there is therefore a mixture of coloring matters. Otherwise the description of the sensitizing action of this coloring matter is unnecessary from my previous description of bleu coupier.

Nigrosin (soluble in water) from the aniline factory of the Société Anonyme des Matières Colorantes, of Paris (depot in Vienna, W. Weuber's) is in its condition similar to the coloring matter described previously.

3. *Indulin of nitrophenol and aniline hydrochlcrate*, produced by Dr. John Walter, is a coloring matter soluble in alcohol, which was applied as a bath of 10 to 12 c.c. of the alcoholic solution (1 to 400) and 100 c.c. water. This coloring matter reduces the total sensitiveness of the bromide of silver, but will give with sufficiently long exposure a weak action from green to the extreme red. It shows a weak increase of the sensitizing action towards the red end (*a* to H), while the indulin described under 1. imparts to the bromide of silver a decreasing sensitiveness towards the red end.

4. *Fast blue*, from the aniline factory of Meister, Lucius & Brüning, of Hochst-on-the-Maine, also belongs, according to the manufacturers, to the indulins. It is to be found in the markets both soluble in water and soluble in alcohol, in two shades (fast blue R and 3 R). The fast blue soluble in water contains the sulpho acid salts of the coloring matter, and does not decompose with ammonia, but becomes only more red-violet. These which dissolve in alcohol became muddy with ammonia pretty soon, and precipitate flakes. The aqueous ammoniacal solutions of fast blue sensitize for green to yellow. The wide (not always distinct) maximum of the sensitizing lays between E and D, a weak action extending to red.

Of a similar character is the water-soluble indulin B, from the French aniline factory of the Société Anonyme (from W. Neuber, of Vienna). Besides the sensitizing in green, a weaker, indistinct maximum appears in orange (D½ C. Curve V, Fig. 2, page 313). The distinct maximum in orange which characterizes bleu coupier is deficient in these indulins. The indulin B appears, so to speak, the bridge between fast blue and bleu coupier.

Gallein, which is obtained by heating phtalic anhydride and pyrogallol, and brought into market as a violet coloring matter, is a good sensitizer for green and yellow (to orange). It can be dissolved in hot alcohol (1 to 1,000) and then 2 to 10 c.c. of this solution can be added to 100 c.c. water with a little ammonia. The violet-red solution, which is very variable, serves for the bathing of bromide of silver gelatine plates. These already show at short exposure a strong maximum of sensitizing between E and D, and at longer exposure the action extends weaker to C. (See Curve IV, Fig. 2, page 313). With carbonate of ammonia, bicarbonate of soda, etc., the gallein solution becomes more cherry-red. It will then tinge better, can be applied in a more diluted state, and does not act unlike the former solution, but the maximum in green appears smaller and weaker than by employing the ammoniacal solution. Unfortunately the alkaline gallein preparations are inconstant.

Different green colors.—Several green colors which are not in the market, and were placed at my disposal by Dr. John Walter, sensitized the bromide of silver for red. The green produced from toluyl-aldehyde and dimethyl-aniline (concentration 1 to 3,000, with a little ammonia) gave at 30 to 150 seconds' exposure strong, small sensitizing maximum at C. B. The behavior of green from methylsalicyl-aldehyde and dimethyl-aniline is similar. Quite a weak action was shown by green from benzoldehyde and methylamyl-aniline, hurting the total sensitiveness very much, also green from methyldiphenylamin and benzol trichloride. In the application of these coloring matters as sensitizers, I can see no such advantages that their use can be recommended.

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* With abundant lighting the maximum will spread and unite with the maximum in green.

Different orange-red and orange-yellow coloring matters.—Of all the great number of orange colored pigments which I tested spectrographically upon their sensitizing ability, a great part exercised a weak, but still recognizable action upon the increase of the photographic sensitiveness of the bromide of silver gelatine for green. Oftentimes only a moderate extension of the photographic spectrum picture could be recognized towards green. Sometimes a more or less distinct maximum of the sensitizing between E and D appeared.

I content myself by simply enumerating the weak green sensitizers: Binitrofluorescein, tetranitrofluorescein, chlornaphthylic acid,* nitrobenzylfluorescein, † monobromfluorescein which acts much worse than tetrabromfluorescein (eosine).

Different orange-yellow or orange-red coloring matters showed, when added to the bromide of silver gelatine, inferior action, *e. g.*, toluidin sulpho-acid diazotized with β naphthol, the same with α naphthol, and sulphanilic acid with α naphthylamin. Further, chrysoidin from *m* phenylendiamine + *o* toluidin; *m* amido-benzoic acid diazotized + resorcein; *m* toluylendiamin + *o* toluidin. A little better is the behavior of orange from diazoparanitrobenzol and resorcein, affecting a weak sensitizing between E ½ D without reaching to the eosine colors in sensitizing action.

(*To be continued.*)

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, JUNE 7, 1887.

President H. J. NEWTON in the Chair.

The *Secretary* announced the usual photo journals and papers contributed to the section, for which the accustomed vote of thanks was passed.

The *President* appointed Messrs. J. B. Gardner, O. G. Mason and Dr. A. H. Elliott as the Field-Day and Annual Dinner Committee for 1887.

The Executive Committee then reported as follows:.

REPORT OF THE EXECUTIVE COMMITTEE.

This being the last meeting of the season, it is expected the committee will briefly recount the work done during the past winter. In accordance, therefore, with this custom, the committee would state that at the meeting on the first Tuesday in September, 1886, the section was entertained with an exhibition of pictures made by members and others on the occasion of the field-day excursion and dinner at Fort Lee, N. J.

Mr. J. B. Gardner also read a paper entitled, "The American Institute an Aid in Advancing the Best Interests of both the Amateur and Professional Photographer." (See BULLETIN, September number, page 554).

At the meeting in October, Dr. Ehrmann exhibited samples of argentic dry plates and briefly explained how easily such pictures could be made, and the advantage gained over the old methods of making ferrotypes. The remaining portion of the evening was taken up by Dr. E. L. Wilson with an illustrated lecture entitled, "An Arabian Night's Entertainment."

The section at its regular meeting in November was entertained by Mr. Abraham Bogardus with a paper entitled, "Forty Years Behind the Camera; also "The Photographic School of Chautauqua," by Dr. Charles Ehrmann and Mr. Charles Barnard. Dr. Van der Weyde rehearsed some of his early experiments in the daguerreotype process, and explained briefly the chemistry of the art. He was followed by Sergeant von Sothen, who recounted (by request) the means employed in photographing the Flood Rock explosion.

President Newton exhibited some imperial card pictures to illustrate the modifications that should be observed in lighting the subject when working with wet or dry plate processes, thus demonstrating that a more subdued light was required when dry plates were used.

At the December meeting the section was entertained by the President of the Kit Kat Club, Mr. P. G. Cusachs, with a chalk talk illustrating "Life in the Mountains of Catalonia" (Northeastern Spain), thus suggesting to the thoughtful photographer a section of the world not only healthful, but crowded with objects of interest to every true lover of art.

At the January meeting Professor D. L. Elmendorf entertained the audience with an illustrated lecture entitled "A Trip Across

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* Produced after Fehling's New Dictionary of Chemistry, Vol. I, p. 635.

† Does not act better, but weaker than benzylfluorescein (the chrysolin of the market).

Our Continent." (For a full account of this lecture See the January number of BULLETIN, 1887, pages 52 and 56.)

The section was entertained by Mr. Elbridge Kingsley, who discussed the subject of "Art in Photography" at the February meeting. This has also been fully published in the *Photographic Times* and the BULLETIN.

Mr. Kingsley's lecture was followed by some well deserved eulogistic remarks by Mr. J. W. Champney, who occupied the remaining portion of the evening with black-board sketches involving principles of art instructive and amusing to both artists and photographers.

At this meeting also was presented to the section, through Dr. A. H. Elliott, a number of exceedingly valuable foreign photographs that received a gold medal at the Photographers' Convention in St. Louis, 1886.

A lecture was given before the section in March, by Dr. M. N. Miller, entitled "A Perfect Camera." (See BULLETIN 1887, page 186.)

Dr. O. G. Mason also explained and illustrated, with the projecting lantern, Dr. Higgins' method of measuring the exact time of exposure in making what was commonly called instantaneous views; all of which has been fully published in the *Photographic Times* and the BULLETIN. Miscellaneous pictures consisting of landscapes and waterscapes made by President Newton were also projected on the screen and briefly described by him.

At the regular meeting in April, Professor L. H. Laudy gave an illustrated lecture entitled "Acadia and the Maritime Provinces," and Mr. E. C. Townsend projected on the screen and explained a number of the loftiest structures known to history. Dr. John Habirshaw also exhibited a dozen or more slides that were described by Mr. T. C. Roche. Dr. Charles Ehrmann at the May meeting read a paper entitled, "Color-Sensitive Methods and How to Work Them," followed by "A Voyage to the Moon" by Dr. O. G. Mason. Both of these papers have been fully published in the *Photographic Times* and the BULLETIN. In closing the present season the committee take pleasure in announcing that Mr. Ernest Edwards will entertain the section in explaining and illustrating the photo-gravure process and present to each of his auditors a souvenir print illustrative of this branch of photography.

In reviewing the work of the past season the section may well congratulate itself on being able to secure such talent as have attracted large audiences composed not only of photographers, but artists, engravers, men of letters and men of science. Never in the history of the section has the average attendance been so large as during the past winter. Never before have artists, scientists, photographers and literary men consented to meet on the same plane to encourage and aid an art-science that in time past has too often been underrated by art students, and too often regarded by scientists as belonging only to the realm of mechanics.

Two of the most popular lectures, those of Dr. Wilson and Mr. Cusachs, were not published by any of the photographic journals, owing to their being predisposed of by their authors, one to the managers of the *Century Magazine* and the other to the Harpers. They have, however, given quite liberal reports of all the proceedings of the section, and the American Institute may heartily thank them for permanently recording the transactions of this branch of the institute free of cost.

The Superintendent and other officers have not been backward in supplying the substantial needs of the section in order to make the meetings a success.

The officers of the section have also been faithful in the discharge of their several duties, never being absent from any one of the meetings during the entire season, and thus by united effort the section has gained a popularity never before realized since its establishment as a branch of the institute.

With its present momentum it is hoped that its uses will be greatly multiplied in the future and continue to be the center from which shall flow all that is both useful and new in every branch of the art.

J. B. GARDNER,
Chairman.

MR. ERNEST EDWARDS was then introduced and occupied the remaining portion of the evening in explaining and illustrating the photo-gravure process. [See page 367.] At the close of the lecture each one of the auditors was presented with a souvenir print illustrative of this special branch of photography. A portion of these pictures were printed in the presence of the audience during the progress of the meeting.

On motion of Dr. M. N. Miller a unanimous vote of thanks was tendered to Mr. Edwards for his generous gift of pictures and for his very interesting and instructive lecture.

The section then adjourned, to meet on Tuesday, September 6th, at 8 P.M.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held Wednesday evening, June 1st, with the *President*, Mr. FREDERICK GRAFF, in the chair.

The Committee on Presentation Pictures for 1887 reported that they had selected "On a Virginia Turnpike," by Mr. John C. Bullock, and "The Elephanta Caves, India," by Mr. Charles R. Pancoast.

The paper for the evening was read by Mr. Charles Truscott, the subject being "Some Photographic Heresies." [See next BULLETIN] The reading of the paper was followed by an interesting discussion of various points touched on by the writer.

Mr. COATES preferred to use plates slow enough to give several seconds' exposure, as with extremely rapid plates cap eqposures could not well be given for such times as 1, $1\frac{1}{2}$, or $1\frac{3}{4}$ seconds.

Mr. ZECKWER suggested the plan of counting, as rapidly as the numbers could be pronounced, from 1 to 5, which would be found to take about one second. If then $1\frac{3}{5}$ seconds are required for the exposure, by counting thus rapidly 1 to 5, and then 1 to 3, the fraction of the second would be determined with sufficient accuracy for practical purposes.

It being suggested that the time could be prolonged by use of a small stop, Mr. Truscott made the objection that this was likely to cause diffraction of the rays of light, and consequent fogging of the plate. He stated that the shutter he used was accurately graded for short time work from $\frac{1}{250}$ to $\frac{2}{3}$ of a second.

In reply to a question by Dr. Wallace, Mr. Truscott stated that in wet plate photography with short time exposures, such as portraits of babies, etc., he had frequently heated the developer to about one hundred degrees F. before applying to the plate.

For developing short exposures on gelatine plates, he used carbonate of soda, 1 part to 4 of water, varying the solution from one-fourth to full strength. He found different brands of plates to vary greatly in the time necessary for development.

As to the most desirable position for a shutter, he considered back of the lens the best for avoiding fog, and in the middle of the lens the best for economizing space.

Mr. FASSITT called attention to an article on page 144 of the *British Journal Almanac* for 1887, on "A Cheap, Simple and Effective Reducer for Gelatine Negatives." The directions called for diluting "ordinary chloride of lime with half its bulk of water," and then immersing the negative in the mixture about twenty seconds.

On trying the plan he found that the quantities specified produced merely a thick paste, and not a solution in which the plate could be well immersed. Its action was to quickly and entirely remove every vestige of the film from the plate.

As to its effectiveness there could be no doubt, but its use for any other purpose than cleaning glass could hardly be advised. The publication of such impracticable recipes was calculated to do much harm, as they are frequently copied into one journal after another, without trial or investigation by the publishers, continuing their misleading career indefinitely.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THIRD ANNUAL MEETING, APRIL 12, 1887.

(*Continued.*)

Annual Report of the Lantern Slide Committee.

THIS committee is pleased to report that considerable progress has been made in the year just closed in the making of lantern slides among our own members, and in the establishment of a system of exchanges with other American societies, whereby a continued variety of slides is supplied for the entertainment of our members at our lantern exhibitions. In addition to this, a special international exchange with the London Camera Club has been carried out, which bids fair to bring to the society a large number of rare foreign slides that will be available for use by members of the society for their own private lantern exhibitions. The first exchange of this character was effected last fall, and it fell to the lot of this committee to apportion the slides received among the contributing societies, which resulted in giving seventy English slides to this society, fifty to the Philadelphia Club, forty to Cincinnati, twenty to Pittsburg, and twenty to the Boston Camera Club. Two hundred in all.

The only changes of note among the contributing societies is the withdrawal of the Philadelphia Amateur Club and the accession in its place of the Photographic Society of Philadelphia, who so liberally contributed some very beautiful slides to our recent photographic exhibition. There has also been added the St. Louis Amateur Photographers'

Club, and The Lantern Slide Club of Chicago. The Baltimore Society of Amateur Photographers also contemplate going into the exchange.

It will thus be seen a wider interest is being taken in the subject, and it is hoped a greater improvement will be shown during the coming year. The committee urges upon members to take up this easy and simple way of making copies from their negatives. Mr. Champney's lecture on the variety of mats desirable to employ for cutting out the unpicturesque portions of lantern slides has led to much good, and several ways for producing or cutting out the mats have been devised. The committee expects new devices will be furnished for easily making any peculiar shape or size of mat. Respectfully submitted,

RICHARD H. LAWRENCE,
Chairman.

Preliminary Report of the Committee of Arrangements on the First Annual Exhibition.

It will be interesting to the members of the society, and satisfactory to the committee, to know that the recent first annual exhibition under its charge was highly successful. The exhibition opened on Saturday evening, March 26th, with a private view, being very largely attended.

On Monday evening, March 28th, the first lantern exhibition was given, Mr. John J. Wilson and Mr. William M. Frisbie kindly volunteering their services to operate the instrument, while Mr. J. Wells Champney announced the subjects. It proved to be one of the most attractive features of the exhibition. Each day many visitors from out of the city tarried long to enjoy the pictures; and it is estimated as many as 1,500 persons attended the exhibition during the week.

On Wednesday evening the awards of the Board of Judges were announced, which, so far as the committee could learn, gave universal satisfaction. An additional report was read on Friday evening, April 1st, of the awards of lantern slides and window transparencies.

The committee desire to thank Messrs. B. N. Mitchill, C. C. Roumage, Jr., John J. Wilson, J. Wells Champney, George B. Agnew, William M. Frisbie, Dexter H. Walker and Thomas T. Eckert, Jr., for their assistance.

Having no previous experience in conducting a large exhibition, the committee were at some disadvantage in determining the probable receipts and expenses, but it relied largely upon the assistance of outside members to purchase season tickets and to induce their friends to visit the exhibition.

Several outstanding accounts, not yet paid into the committee, render it impossible at this time to give a full statement of receipts and expenses with vouchers, but enough is insured to make it very certain that, if no losses in the accounts due occur, there will be a balance in the hands of the committee for the society's treasury.

The following is latest estimate of gross receipts andexpenses;

Probable total receipts.....	$971 99
" " expenses...	950 72
Probable balance	$21 27

Inasmuch as the society was obliged by the terms of its agreement with the other clubs to bear the whole expense of the exhibition, it is a source of congratulation that it had the good fortune to succeed financially in an undertaking of this magnitude.

Respectfully submitted.

C. W. CANFIELD.
F. C. BEACH,
JOHN T. GRANGER,
ROBERT S. REDFIELD,
GEORGE E. CABOT,
Committee.

The *President* then read his annual report. [See page 237.]

The excellent showing made in all of the reports elicited considerable applause. They were accepted and ordered placed on file.

The *President* then called on Mr. F. D. Gray, the inventor of the vest camera, to exhibit an improved detective camera which he had. It presented a very neat appearance, was compact and simple, and was intended to operate with paper instead of glass. The peculiarity of the registering device consisted in a spirally grooved flat disk, having in the grooves holes at varying distances according as the roll of exposed paper increased in diameter. The simplicity and certainty of the registering device seemed to be one of the best features of the camera.

The *President* then showed a detective camera brought by Mr. E. Terry, made very similar to the Anthony camera, but having on the outside a special button which released a spring intended to quickly pull back a slide in front of the lens and shutter. This worked very nicely, and, the inventor claimed, prevented plates from being accidentally exposed. It also avoided the necessity of removing an outside cap or slide from in front of the lens as is usually required. The focus is secured in the usual way by moving a lever, but a special set screw is provided to hold the shaft of the lever after the latter is once set. The back portion of the camera is detachable, and there is also a convenient lever on top, at the front, for regulating the speed of the shutter, moving over a figured scale.

The *Secretary* was next called upon to read the following report of the Nominating Committee handed in by Mr. John V. Black.

Report of Nominating Committee.

We the undersigned, members of the Nominating Committee, having met in accordance with the Constitution and By-laws, respectfully recommend the following gentlemen as the Board of Directors for the coming year:

Mr. George R. Allerton.
" Sydney Bishop.
" Frederick C. Beach.
" Robert M. Fuller.
" W. M. Frisbie.
" John T. Granger.
Dr. John H. Janeway.
Mr. Richard H. Lawrence
" Henry V. Parsell.
" Daniel P. Read.
" Dexter H. Walker.

JOHN V. BLACK,
WILLIAM M. FRISBIE,
Nominating Committee.

On motion of Dr. Piffard the report was accepted.

Mr. Black then handed the Secretary letters from F. C. Beach, Henry V. Parsell, Dr. John H. Janeway and Richard H. Lawrence, requesting the Nominating Committee to withdraw their names from the ticket.

On motion the communications were ordered laid on the table.

Dr. Piffard moved that a ballot be taken for the election of Directors.

At the President's suggestion this motion was amended, so that one ballot be cast for the society by the Secretary. No objection being made it was so ordered, when the President declared the ticket as nominated by the committee duly elected.

No further business being before the meeting, on motion of C. Wager Hull it adjourned.

Immediately thereafter the new Board of Directors met, and organized by electing the following officers:

Dexter H. Walker, *President.*
George R. Allerton, *Vice-President.*
Henry V. Parsell, *Treasurer.*
John T. Granger, *Corresponding Secretary.*
Daniel P. Read, *Recording Secretary.*

On April 19th the resignations of F. C. Beach and Dr. John H. Janeway as Directors were accepted. Mr. Thomas T. Eckert, Jr., and Mr. C. C. Roumage, Jr., were elected to fill the vacancies.

◆

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—A. C. J. writes: Will you be kind enough to answer the following questions through the columns of the BULLETIN. I have a 4-4 Darlot lens and it will not cover a 6½ x 8½ plate sharp. Can you tell me how to remedy it? Also is the piece of albumen paper which I inclose first-class, there appears to be so much waste? And what make of dry plates are best adapted to instantaneous work?

A.—If your lens covers a 6½ x 8½ plate and only lacks sharpness you must use a diaphragm, and the definition will be better towards the edges. If there is a shadow at the corners of the plate, the lens is too small. The albumen paper which you send is a bad specimen to judge from, but if the edges are all as bad as the piece sent, we should not call it first-class paper. For instantaneous work use the Stanley Lightning plate, it works very well indeed if you do not over-expose it.

Q.—T. S. A. writes: Will you tell me, through the columns of the BULLETIN, the answers to the following questions: 1. What would be the proper exposure with No. 3 E. A. Rapid Lens, medium diaphragm, with plates of sensitometer No. 22, with a medium light in a tent? 2. How can I obtain dense negatives with ferrous oxalate developer using the above lens and plate? 3. What is the object of the single swing to the Success Cameras? 4. What collodion is the best for ferrotypes?

A.—If the tent cloth allows a fair light to come through, we should say about three to five minutes according to the light and the character of the objects to be photographed; dark bodies requiring longer time. Dense negatives can be obtained with the ferrous oxalate developer by being careful not to over-expose your plate, and by developing slowly, using considerable potassium bromide in the developer. The swing on the camera is to correct the distortion of the lines when the lens is tilted either up or down, otherwise the vertical lines will separate or come together as the case may be. Our publishers supply a collodion especially for ferrotypes and it is very good.

Q.—H. G. P. writes: Will you please inform me, through the BULLETIN, what causes a negative to turn green after being fixed and put into the alum?

A.—The cause of green fog is not certainly known, but it appears to be some imperfection in making the emulsion. A bath of hydrogen peroxide has been recommended as a cure.

Q.—C. M. K. writes: If it is known, will you kindly give, through the BULLETIN, the composition of "The Moreno Universal Developer," and greatly oblige a group of readers.

A.—We do not know the composition of the above developer, except that it contains pyrogallol. The other constituents could be found out by chemical analysis.

Q.—W. G. S. writes: Will you kindly, through the columns of the BULLETIN, answer the following questions. The first I would not ask if I had not just commenced to silver my own paper, and were there not some dispute about it. 1. If you keep your silver solution from coloring, will it do any harm to neutralize it with "sal" soda? If it will do harm, what is good to use? 2. I bought some blue print paper the other day, and when I printed with it it was quite distinct, but on putting it in water the details entirely disappeared. It was in about ten minutes. What was the cause of its acting so?

A.—You can clear your silver bath by neutralizing with pure sal soda and then placing it in the sunlight for some hours, when it will get black from precipitation of the organic matter and metallic silver, and by filtration gives a clear bath. Your blue print paper was not exposed long enough, that is why your prints fade. Print very deep indeed.

◆

Views Caught with the Drop Shutter.

DR. WILSON'S "Quarter Century in Photography" is just out and is a truly handsome volume. It is the same size and style as "Photographics," and contains 500 closely printed pages. After we have carefully examined it we shall tell our readers more about its contents. In the meantime we would say you cannnot make a mistake in getting it.

WORD has come to us from Cincinnati that P. SMITH & CO., the well known stock dealers of that city, have caught the contagion from Thayer, Harris, and others of the brethren in the trade, and have recently moved into new quarters. Their new store-room is located in a modern building, just erected and almost opposite the old stand. It is 28 x 100 feet, the front and rear being almost entirely plate glass, securing a most excellent light throughout. An hydraulic elevator in the rear gives them facilities for the reception and delivery of freight. They are well stocked with goods of all kinds. We congratulate the firm on this evidence of their prosperity.

THIS house, we believe, is one of the oldest, if not *the* oldest, west of the Alleghanies engaged in the sale of photographic goods, "way back" to the old daguerreotype times, when the daguerreotype plate mats and preservers, and the C V X, T M Jewell, and other cases were the leading articles in the trade. They have always kept abreast of the times in all things pertaining to our art, and now, to keep up with their younger rivals, they move into a larger store fitted with all modern appliances for the rapid transaction of business. We have no doubt but that the "Old Reliable" will hold its own for a long time to come, with Mr. D. K. Cady at its head.

LOEBER BROTHERS, the well-known dealers in photographic materials in Nassau Street, New York, send us their handsome octavo catalogue of 100 pages, a prominent feature of which is the latest improvements in apparatus and materials from the factories of our publishers.

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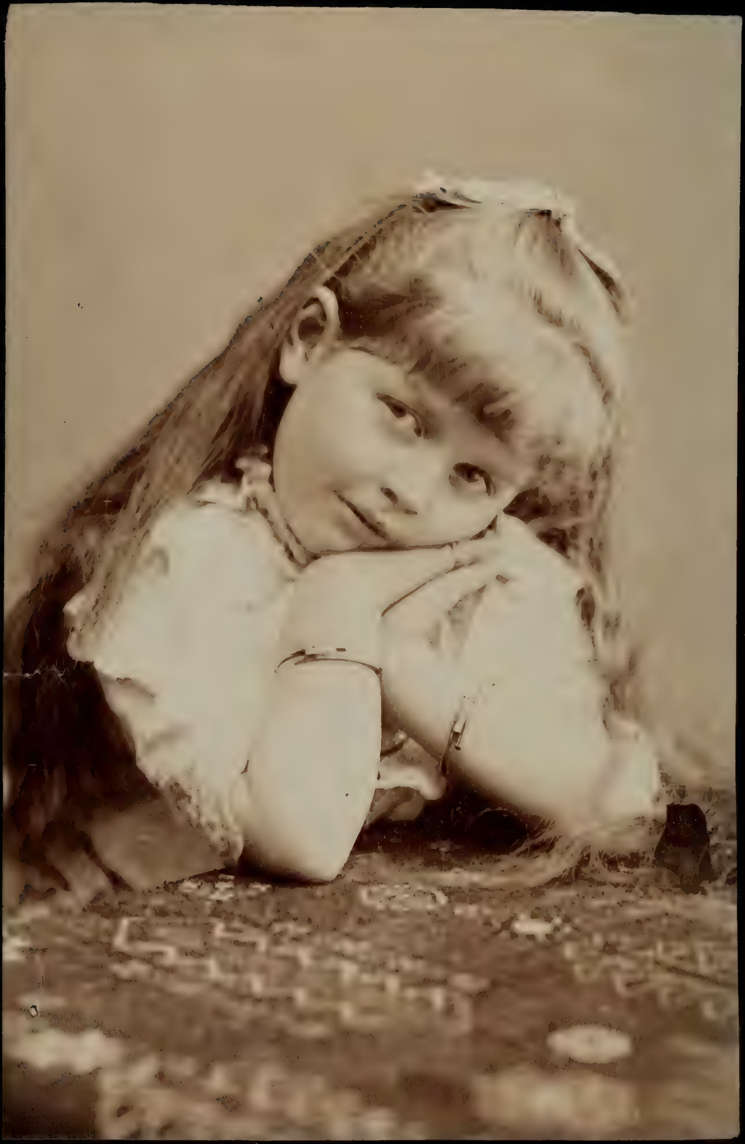

NEGATIVE
ON
STANLEY DRY PLATE.

Childhood.
BY
Hugh O'Neil.

PRINTED ON
N. P. A. PENSE
EXTRA BRILLIANT
ALBUMEN PAPER.

ANTHONY'S

Photographic Bulletin.

Prof. **CHARLES F. CHANDLER, Ph.D., LL.D.,** *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JULY 9, 1887. Vol. XVIII.—No. 13.

CHICAGO, AUGUST 9—12.

Everything now points to a grand meeting for the photographers at Chicago. We are constantly hearing of new attractions for the great Convention, and there is every reason to believe that Chicago will excel herself in this effort to advance the photographic art. Every industry, every handicraft, every art and science has its great annual gathering of the leading spirits and men of progress in its ranks. Photography is now a well established art, and as an evidence of its power and utility we have these great annual meetings of those who labor for its advancement.

These Conventions are not mere social reunions, although the greeting of old friends and the meeting of new ones is a most delightful feature; but there is an amount of instruction presented and a development of new ideas that no progressive photographer can afford to lose by being absent from the Convention. It is true the papers are all published, as well as the discussions, nevertheless there are lots of little quiet discussions among the members of the association, in the art galleries and in the apparatus exhibition, where information of a most practical nature is obtained by those who need it most. In other words, men come together to compare notes, and many a one returns satisfiedthat he did right to come. He has found out some little error he has long practiced; he has noted some better way of doing a certain piece of work; and although the matter is a trifle in itself, the improvement in the aggregate makes a marked difference in the kind and quality of the work produced. But there are substantial rewards for those who are ambitious. Never before in the history of the association has there been so much money in the form of prizes offered for competition. Many, very many, photographers of all grades of professional experience have the opportunity of taking home some material reward for going to Chicago or sending an exhibit there.

We are satisfied that a large number of our readers are already prepared to send an exhibit, and that many of them will be there personally. If any are now hesitating over the question of going, we urge them to do so no longer. It is not possible for you to meet your professional brethren without receiving some benefit from the intercourse. Get outside yourself for a little while and you will find there are lots of men willing to help you out of your difficulties, lots of generous spirits that take pleasure in showing many interesting and novel methods of obtaining points that add new merits to the productions of photog-

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raphy. If you continue to remain satisfied that you know all that is worth knowing in the art, you will suddenly wake up to the idea that knowledge is not confined to any single individual, and that your fellow workers have gone beyond you because they have taken counsel together, while you have been satisfied with the little knowledge you acquired some years ago. There is nothing more certain, in the attainment of the best results in any art, than that a free discussion of principles, a careful honest criticism of results, and a comparison of the products of that art, inevitably leads to improvement. Who receives the benefit of such improvement? Not those that take no part in securing such discussion, criticism and comparison. Not those who think they know it all and stay at home. But those who go to the place of discussion; those who criticise and are in turn criticised; and those who set their work alongside of their fellows for comparison. These are they that go home and feel that it has been good for them to attend the meetings; they have stored away a new set of ideas to serve them in good work until the next convention. It would astonish some of the men who never go to such meetings to take a trip to several successive conventions and note the many prominent workers in our art who come every year, and always with an interest that tells better than words that they find it to their advantage to be present. These men do not want to waste their time in the pursuit of something that is not a benefit to them; they are practical men. Yet their presence at the meetings of our association year after year is an encouragement to our art, and an example it were well many others should follow.

We have said all we can to urge our readers to go to Chicago next month; and we are satisfied that the time will be well spent. If not a single reward is obtained, the meeting with your fellow artists; the grand opportunity of seeing a fine collection of photographs; the rest from the often too crowded daily routine of the studio, will do you good. Then meet us in Chicago on August the 9th and we promise you a royal good time among the fraternity.

EDITORIAL NOTES.

We have received, through the kindness of Dr. H. W. Vogel, two silver prints from negatives taken by the instantaneous magnesium process of Gädicke and Miethe, and mentioned in his letter from Germany which we give on another page. One of these is a group of seven members of the Committee of the Physical Society of Berlin, and the other is a small portrait of a gentleman. It is remarkable how clear these pictures are; the portrait especially is very good. In the latter the subject is holding a cigar in his fingers and the picture of the hands is perfectly sharp, showing that the exposure was very rapid, otherwise a hand held in such a position would surely give evidence of motion.

Speaking of instantaneous photography recalls to mind a report which we saw of a meeting of the London and Provincial Photographic Society, where one of the members stated that he was unable to get a negative of the Queen during her drive through the city recently, because she went at such high speed. We are afraid our English friends have slow plates; they should try some of our Yankee lightning brands. Nothing is so quick but they will catch it.

In our last issue we commented on a so-called process of photography in natural colors. As we expected, it turns out to be a humbug and is practically colored photographs, very much after the style of the Bonnaudtype method used in New York City several years ago. The *British Journal of Photography* speaks of the pictures as follows:

"The appearance of these prints is in some cases rather pretty, bearing a resemblance to good work executed by the time-honored and times-without-number-patented crystoleum process. One of the specimens having been dissected, revealed the fact that it consisted merely of a transparency on glass, having a white paper backing, upon which had been painted washes of water colors which, when the transparency was superimposed, showed through and thus imparted apparent color to the picture, the drawing, lights, and shadows of which were obtained in the course of ordinary photography. How, on the strength of such a process, the "invention" has been acquired, as we are told, by a party of influential British capitalists—the Cellerier Syndicate, Limited—we are unable to say, but it speaks well for the organizing ability of some one."

In our last issue we noted some handsome prints on the gelatino-bromide paper made by our publishers; but we omitted to state that the enlargements were all made by artificial light. David Cooper has devised a new enlarging lantern that appears to leave nothing to be desired in the matter of making enlargements. Hitherto the use of an oil lamp for gelatino-bromide enlargments has been considered unsatisfactory and the best results an impossibility by this means. With the new lantern the finest results appear to be attainable with ease.

A SUMMER school of photography is to be opened on August 1st at Mountain Lake Park, Garrett County, Md., under the direction of Mr. Albert A. Line. Those of our readers who spend the summer in that locality will probably find this an interesting school in which to obtain some practical information.

WE are glad to hear from Mr. A. C. Campbell, the Secretary of the Bridgeport Camera Association, that they have obtained permanent quarters and will at once fit up a convenient dark room. Up to the present time they have been the guests of Mr. L. Farini, who has had much to do with the success of the association. We shall be glad to hear of the results or their recent "Field Day."

◆

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Instantaneous Pictures with Magnesium Light—The One-Legged Camera Stand.

WHAT is the latest novelty in Germany? I answer: Instantaneous photography at night. This is no humbug, but a real fact, and, more than that, it is a practical thing and easy to apply, by burning magnesium. Gädicke, a well-known chemist, and Miethe, just as well known as an astronomer, were the first to demonstrate it. Three months ago they exhibited two group pictures at the meeting of the Photographic Society, and there is no doubt that these pictures were taken instantaneously by artificial light. These photographs elicited much wonder and excitement, but nobody had an idea how they were taken, and their authors promised to describe their process in a separate book. But the inventors had already shown their source of light at the meeting of the Society for the Advancement of Photography. It was not magnesium ribbon or band, but magnesium powder mixed with an explosive body, such as chlorate or nitrate of potassium. Mixtures like these have already been made before, but Gädicke and Miethe were the first to succeed in producing a compound which will burn one-thirtieth of a second, while developing an immense intensity of light, sufficient for taking a well-exposed photograph in the above short space of time.

Thus we have instantaneous photography without an instantaneous shutter. While the inventors were showing this flash, the secret was easily guessed at. My son was the first to imitate it, and even made a photograph of an interior, 42 feet deep, by burning 3 grams of magnesium powder mixed with chlorate (not chloride) of potassium, and a group of six persons by burning 1 gram of magnesium mixed with chlorate.

It is a peculiar fact that all persons at the moment the material is burning will move suddenly, but although they have been moving, the plate will show a sharp picture. The reason for this is that the actual lighting is done before the persons are aware of the flash.

This invention of Messrs. Gädicke and Miethe is indeed an egg of Columbus. I myself experimented more than two years with magnesium, but without success. It burnt partly too slow and gave two much fumes, or the people were frightened by the quick flashes in such a way that I considered it an impossibliity to make such views, the violent moving of the subjects excluding all possibility of obtaining a sharp picture. Messrs. Gädicke and Miethe have now demonstrated the possibility of such a thing. At the meeting of our society the inventors did show what is done and what can be done by the process, and it has been confirmed by one of our most prominent photographers. Mr. Kuntz, supporting Messrs. Gädicke and Miethe in their experiments, and having determined the significance of the process by practical tests, describes the same as simply surprising, and gives testimony for its capability in a number of instantaneous views made by himself. Among these are seven direct magnesium light views, and one that has been taken by combined day and magnesium light. The picture of a dog gives ample proof of the shortness of exposure.

Of particular interest is also the view of an old oil painting, superior as a reproduction of all color tones. Messrs. Gädicke and Miethe succeed in doing this by additional salts, like soda and strontia, which develop red and yellow rays. In one portrait view, taken in combined day- and magnesium light, and where the head was turned towards daylight, it showed that the original shaded part had been changed to the lighted side by the action of the magnesium flash, and therefore any desirable light effect may be obtained.

The proofs were generally admired at the meeting, and the importance of the invention was duly acknowledged. A great drawback is the formation of fumes by the burning of the magnesium powder mixture, but the inventors have given a good remedy for this, as shown by their experiments before the fraternity. The powder was set off in a lantern (a flat case with a glass), showing hardly any traces of fume outside. The lighting of the shadows was done by tin-foil reflectors, the subduing of the high lights through tissue paper, which was arranged between sitter and lantern. In addition to this a second method was shown by the inventors, being particularly adapted for interiors and large groups. This was also examined experimentally by the taking of a group picture. The magnesium mixture, in the form of an extended heap, was burned upon a long strip of tin, and sheets of tissue paper were hung up on a line in front of the apparatus for protection from direct light. A blending of the illumination can be obtained by a double or triple thickness of paper in a manner that the most distant objects are exposed to direct light, and those nearer by are reached through more or less thick or thin layers of paper.

There is no question that this process has a future, and the portrait photographer will be enabled to make numbers of views with the greatest facility, for instance:

First.—Portraits any time of day and night.

Second.—If daylight is too weak, during a rain-storm, or when the sun is low, dark winter days, etc., by supporting the view to be taken with a magnesium flash, an interesting, well-illuminated picture can be obtained.

Third.—To make portraits in the houses of customers without difficulty.

Fourth.—To take children and animals, even in case of greatest restlessness, sharp and sure.

Magnesium might also become of great importance for interior work, and as all light can be concentrated at a moment, the fumes of the magnesium will be harmless. They do not expand until the exposure has taken place. Dark corners can be lit up and large rooms with people moving can be taken instantaneously. The importance of magnesium photography for all branches of photochemical, as well as photo-physical, practice can easily be perceived. By addition of sodium, lithium, barium, or calcium salts, one is enabled to adjust the illumination in taking old paintings, colored walls, and all kinds of colored industrial objects. It is also possible to produce instantaneous pictures under the greatest enlargements of our microscopes, and thus to make studies about physiological processes, the life of micro-organisms, the formation of crystals, molecular movements, etc., which could not be obtained before. If the fumes do not interpose, the lantern can also be dispensed with.

In connection with the foregoing experiments, I made two trials with a group in a long, but narrow, well-lit hall at 11 o'clock at night with an antiplanat (just about equal to a rapid rectilinear), full opening (Schleussner plate) and 7½ grams Gädicke magnesium powder (containing ¾ gram magnesium), set off at a distance of 2½ meters. The powder burnt off openly, a reflector was not used, and the result was a well-exposed group picture of twelve or fourteen persons. Furthermore I succeeded in taking an instantaneous picture on a wet collodion plate, by applying four times the quantity of magnesium. The mixture consists of the following:

Chlorate of potassium	60 grams.
Magnesium powder	30 "
Sulphide of antimony	10 "

It is of importance that the lens is protected from the direct action of the light, or fogging will be the unavoidable consequence.

Another new thing is the one-leg stand of Mr. Becker. With this one is enabled to take a view undisturbed in the most crowded street, being otherwise always incommoded by inquisitive people surrounding the instrument. The camera is fastened the ordinary way upon the tripod top, but instead of fastening three legs to the same, a flat strip of wood with four elastic iron bands, with holes fitting to four of the six points on the top, is joined vertically to the top. This strip telescopes with a second one, so that both either lay alongside of each other, so that they can be drawn out to any chosen distance, and at full length can be connected with the aid of a screw to form one. The second one is covered at the lower end with rubber, to prevent sliding upon slippery ground.

If both strips are moved together, the lens is at the proper height for the eyes, that is about 160 c.m. above ground. In this position the focus is taken as usual. Then a hook, fastened to a strap worn around the body, is put through a screw-eye on the second strip, thus liberating both hands for work on the apparatus, the rubber covering at the end of one of the strips hindering any slipping. The plate holder is now put into position, the shutter set, the slide drawn, and the stand is spread somewhat, so that the lens is about 2½ m. above ground.

To misguide the public a turn is made to the wrong side, and as soon as those expecting to have their pictures taken, deceived this way, have gone to that side, a sharp turn is made, and after sighting through the stand towards the center of the picture, a pneumatic exposure is made.

It is yet to be explained in what manner the apparatus is held in an entirely vertical position during exposure. For this purpose a small lead or weight is fastened to the stand, touching a small ring underneath. Generally it is sufficient to place the apparatus so that it balances easily and rests from no side towards the hands. This stand can also be used in cases of longer exposure, and is a universal stand for all outdoor work.

I hope that these novelties will also be appreciated on the other side of the water.

Berlin, June, 1887.

THE FADING OF PHOTOGRAPHS.

BY W. E. PARTRIDGE.

That photographs fade is known to every person who is so unfortunate as to possess one. Amateurs know by sad experience that work from the best artists shows a tendency to change, which is anything but satisfactory. They also know to their sorrow that their own efforts at silver printing are not like Cæsar's wife, beyond suspicion.

It has been supposed that bromide prints were permanent, but the writer has several in his possession, made in 1882, which are showing decided evidences of darkening. Some of the changes have taken place within a period of twelve months. Of their nature little can be said at present. As the pictures are all mounted upon card-board, which is supposed to be the best that is made, and were mounted with paste in regard to which everything can probably be easily ascertained, their fading may be highly instructive. Everybody knows that silver prints fade because hypo was left in them by reason of insufficient washing. In fact when you take a faded silver print to a professional he will involuntarily and even automatically remark, "this is caused by the imperfect removal of the hypo." As the result of this very general belief our silver prints are washed to death, and the wonder is that the paper, and silver and gold of the toning are not removed along with the hypo.

How it is that hypo can be the cause of fading after such an outrageous amount of washing, certainly passes the comprehension of ordinary amateurs.

As a matter of fact, the writer believes that hypo is not nearly so much the cause of fading as some other things which are entirely neglected. These other causes are certainly well worth consideration.

First and foremost may be placed light falling upon the pictures during the process of fixing them. As is well known, one of the results of dissolving chloride of silver in hyposulphite of soda is the formation of a compound which is sensitive to light, and which then becomes insoluble in both water and hypo. This compound is dissolved by an excess of the hypo, and when entirely removed, the picture is of course fixed. A slight action of light upon it renders it insoluble in hypo and, so far as observations now at hand go, the insoluble compound that is formed is transparent and completely invisible upon the white surface or upon a sheet of glass. This insoluble compound, however, is sensitive to light. It gradually grows yellow with age and exposure to light, and finally assumes a transparent orange tint which is, in the case of a negative, completely opaque to chemical rays. The deepening of the tint continues long after the removal from the light. Very many cases of so-called fading of photographs and yellowing with time can be traced to the formation of this insoluble silver salt. Some photographers, possibly the majority, are in the habit of fixing in rooms where the uppermost prints in the fixing baths are more or less exposed to the action of white light. Under such circumstances, the formation of this light-sensitive, but insoluble, compound would seem to be inevitable. The conditions which would prevent some prints from fading, while others from the very same batch and washed in the same way faded or yellowed very badly, will occur to every one.

There is still another cause for yellowing which deserves more careful attention, and that is prolonged washing. The following experiment has pretty clearly demonstrated this fact. A number of pictures printed by a professional were taken unmounted for the purpose of glacéing them. A portion of these were subjected to a rather unusual soaking in water, while the others were wet a little less than an hour. So far as observation goes at the present time, all the long soaked prints have become decidedly yellow in their high lights. The yellow in each instance is very marked, and precisely that which would be expected in an old photograph. As the treatment of these pictures had been practically identical in every respect, and as the yellowing has taken place within six months, the conclusion may naturally be drawn that the extra exposure to the action of water either caused the albumen surface to become sensitive to light, or increased its natural tendency to grow yellow. It is a question raised by these experiments whether it would not be better to ascertain the minimum length of time needed for complete washing and fix upon this as the safest, rather than adopt the ordinary plan of giving "plenty" of wash, so as to make the thing certain.

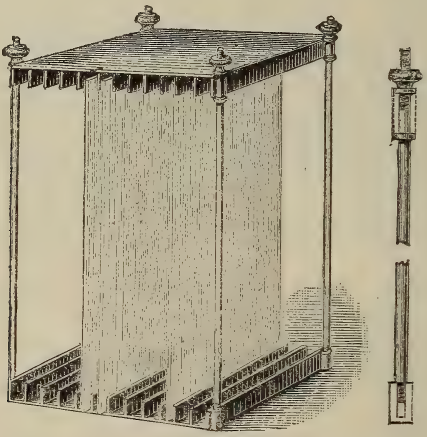
The question of whether prints fixed in a weak light are more liable to fading and to yellowing than others, can readily be settled by the substitution of a yellow light for the one in use.

The moral to amateur photographers has been preached over and over again, and it would hardly be worth while to repeat it here, were it not for the fact that recently an amateur complaining of badly stained pictures was at a loss to know how these stains could have made their appearance on negatives which two years ago seemed to be in first-class condition. Make it a rule not to take a negative into a white light until two or three minutes after every trace of hypo has disappeared from the negative in the fixing bath. The yellow stain which follows the exposure of a half-fixed plate sometimes makes its appearance at once, but under other conditions it may take several weeks. A bromide print upon paper is peculiarly sensitive, and the half-fixed and still damp material prints to a slaty-gray almost instantly.

PROFESSOR BARBIER'S WASHING APPARATUS FOR PLATES.

BY DR. J. M. EDER.

At present there are many apparatus in use for the washing of the fixed bromide of silver negative, and I have described several such constructions in my "Photography with Bromide of Silver Gelatine" (third edition, page 238), and my Year Book for Photography, 1886. Of the many systems which are found in the studios, Professor Barbier's washing apparatus surpasses all in the facility with which it is taken to pieces and packed into a small space. This device I found in Professor Barbier's laboratory at the "Polytechnicum" at Zurich.



The above figure shows the apparatus in use. Two zinc plates, having tin grooves are connected at the proper distance by brass rods and screws. To the lower part the rod is screwed direct, and passes through an opening of the upper plate and is then fastened with a screw and nut. This apparatus holds 12 plates 13 x 18 c.m., and is placed in a suitable compartment filled with water. When put together, this apparatus takes up only a space of 10 x 12 c.m. surface by 1½ c.m. thickness, and this, as well as the rods, are very easily packed. This arrangement appears to be very practical for outdoor photography for amateurs and tourists, and deserves recommendation.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

G. Wharton Simpson died early in 1880, after being for twenty years editor and proprietor of the *Photographic News*. He was well-known in literary and artistic circles, and was the founder of the since extinct Solar Club, a club established for social purposes, but formed almost entirely of photographers. In science he did good work in the introduction and perfection of the collodio-chloride process, and in endeavoring to produce natural colors by photography.

1858. "The Photographic Teacher; or, What to Do in Photography, and How to Do It." H. Squire & Co., 52 King William street. 1s.

Second edition, 1859. 64 pp. Sixth edition, December, 1859.

1868. "Production of Photographs in Pigments; containing an Account of Swan's Carbon Process." 8vo. Carbon print as frontispiece. Piper & Carter. 7s. 6d.

REV. J. L. SISSON.

1858. "The Turpentine Waxed-Paper Process Described and Illustrated. To which are added Notes upon the Wax Paper and other Processes." 57 pp. A. Marion & Co., 152 Regent street. 2s.

This little book is illustrated with two varnished, stereoscopic prints from negatives on turpentine waxed and iodized paper by the author, whose preface is dated from Lausanne. The prints had not faded in the copy I examined.

THOMAS SKAIFE.

1859. "Report of a Short Lecture on the Pistolgraph and its Chromo-Crystal Productions." By T. Skaife, at the Royal Pavilion, Brighton, November 17, 1859. 10 pp. J. Hogarth, Haymarket.

1860. "Instantaneous Photography, Mathematical and Popular, including Practical Instructions on the Manipulation of the Pistolgraph according to the mode practiced by the Inventor and most successful of his pupils." 36 pp. 9 wood-cuts. J. Hogarth, 5 Haymarket. 1s. Second edition, 1863.

The Pistolgraph was a "patent camera" with which Mr. Skaife succeded in getting small pictures (about two inches in diameter) in the "twinkling of an eye," a period whose duration he estimates at one-tenth of a second. The price of the apparatus was ten guineas. The "chromo-crystal productions" were photographs placed between two pieces of glass, which were then heated until they softened and adhered to one another. It is stated that Mr. Skaife was once arrested on a charge of attempting to shoot the Queen, he having "fired off" his pistolgraph at Her Majesty as she was taking a drive near Windsor.

SAMUEL SMILES.

1878. "Lives of the Engineers." Vol. IV. Boulton and Watt. New and revised edition. 8vo. (Supposed photographs taken at Soho, Birmingham, 1780, see p. 206.) J. Murray, Albemarle street. 7s. 6d.

The "supposed photographs" were really reproductions of pictures by a mechanical process. (See M. Boulton.)

PROFESSOR C. PIAZZI SMYTH, F.R.S., Astronomer-Royal for Scotland, is an able and ingenious man who has had numerous encounters with "the powers that be," in which he has generally had the best of it.

1870. "A Poor Man's Photography at the Great Pyramid in the year 1865, compared with that of the Ordnance Survey Establishment, sudsidized by London Wealth, and under the orders of Colonel Sir Henry James, R.E., F.R.S. (Director-General of the Ordnance Survey), at the same place four years afterwards." A Discourse delivered before the Edinburgh Photographic Society on December 1, 1869. (Pamphlet.) 24 pp. H. Greenwood, 2 York street, Covent Garden. 1s.

Our readers need scarcely be reminded that Professor Smyth is the principal supporter of the theory which states that the Great Pyramid was built under divine inspiration as a permanent record of weights and measures, etc.

J. SOLOMON, a well-known dealer in photographic apparatus, etc.

1863. "Photography in Three Lessons: a Book for Beginners." 16 pp. J. Solomon, 22 Red Lion square. 6d.

1874. "Photography in Four Lessons: a Book for Beginners and Advanced Students. Comprising the Best Methods of Producing Large Pictures from Small Ones." 8vo. 40 pp. J. Solomon, 22 Red Lion square. 1s.

1879. "Photography in Six Lessons: including Transfer Pictures and Enlargements." J. Solomon, 22 Red Lion square. 1s.

1874. "Photo-Vitrified Enameling; or, the Art of Vitrifying Photographs on Enamel or China. Being the Secret Processes taught for years past at J. Solomon's Photographic Warehouse, Red Lion square." Price 5s.

The last title is from an advertisement. A book I examined at the British Museum Library, marked as "Received January, 1874," has the following title: "Vitrified Photographs on Enamel. The Powder and Fiber Processes." By J. Solomon. 8vo. 15 pp. At the end is a list, extending over three pages, of materials required.

Marcus Spalding, "Assistant to Roger Fenton in taking the Crimean Photographs."

1856. "Theory and Practice of the Photographic Art, Including its Chemistry and Optics; with Minute Instructions in the Practical Manipulation of the Various Processes, drawn from the Author's Daily Practice." 8vo. 219 pp. 123 wood-cuts. Houlston & Stoneman, 25 Paternoster row, and W. S. Orr & Co., Amen Corner. 2s.

This book formed a volume of "Orr's Circle of the Sciences." Later editions appeared in 1858, 1859 (revised by Martin), and 1861.

Arnold Spiller.

1882. "Elementary Treatise on Photographic Chemistry." 12mo. 72 pp. Illustrated. Piper & Carter. 6d.

The letter-press of this useful little book originally appeared in the *Photographic News.*

T. H. M. Stanfield.

1866. "Photographic Manipulation; being a Manual of Practical Photography for Amateurs." 30 pp. T. H. M. Stanfield, Torquay.

W. F. Stanley.

1871. "Photography Made Easy: A Manual for Beginners. Containing full Instructions for taking Portraits and Views by either Positive or Negative Processes; with Illustrated Description of the Apparatus, and Directions for Preparing the Various Solutions Used." 8vo. 32 pp. W. F. Stanley, Optician, Railway Approach, London Bridge. 6d.

Second edition, 1873. Seventh edition. 41 pp. 1880.

1881. "Dry Plate Photography, a supplement to the above." 8vo. 8 pp. W. F. Stanley, London Bridge.

Mr. Stanley is an ingenious worker, who has devised improved cameras, a handy actinometer, etc.

Henry Stevens was an American who acted as London agent for American book-buyers. He was a great enthusiast in his work, and possessed a most extensive knowledge of rare books.

1878. "Photo-Bibliography; or, a Word on Printed Card Catalogues of Old, Rare, Beautiful, and Costly Books, and How to Make Them on a Co-operative System. And Two Words on the Establishment of a Central Bibliographical Bureau or Clearing-House for Librarians." 16mo. 49 pp. Plates, etc. Privately printed. H. Stevens, 4 Trafalgar square; and at Scribner's and Trübner's, New York. 6s.

The substance of this beautiful little book was read at the Conference of Librarians, October, 1877. It appears to have been issued first as a pamphlet, and then in book form. The author proposes to photograph the title pages of books on a uniform scale, and reproduce them as electrotype portraits of the books. Such copies of all title-pages should be kept in a central clearing-house, and sold to librarians and others. Stevens died last year, but no doubt his scheme will be realized some day.

William Strudwick.

1860. "The Art of Photographic Etching." Pamphlet. 12 pp. London.

An opaque film was obtained by exposing a sensitized collodion plate to daylight; the plate being then developed, fixed, dried and varnished in the usual way. Upon this film any desired design could be picked out with etching-needles, etc. Then prints can be taken on sensitized paper. The author offers to work the process.

W. T. Stillman, who occupies the honorable post of correspondent for the *Times* in Greece, the Levant, etc., may be claimed almost equally by England and the United States, so fairly has he divided his photographic work between them. Whether contesting with Dr. Schliemann over the ruins of Troy, or carrying off the medals of the Photographic Society of Great Britain, Mr. Stillman is equally able and equally successful.

1874. "The Amateur's Photographic Guide Book to the Dry and Wet Collodion Process." C. D. Smith & Co. (afterwards M. P. Tench), Opticians, 153 Fleet street. 1s.

1875. "Every Man His Own Photographer." Liverpool Dry Plate Company. 6d.

This little book was written as a guide to the working of the collodion emulsion dry plates prepared by Mr. Peter Mawdsley. It did not bear the author's name, so might have been entered in the anonymous list had not Mr. Stillman kindly informed us that he was responsible for it.

(*To be continued.*)

COLOR-SENSITIVE METHODS AND HOW TO WORK THEM.

To the Editors of the Bulletin.

I notice in one of your contemporaries a paper read by Dr. Ehrmann before the Photographic Section of the American Institute. The learned Doctor likes to speak on isochromatic or color-sensitive photography, and I would be the first to acknowledge him if he would not be so unfortunate as to make blunders in the matter over and over again. I have mentioned several in the issue of May 24th of your valuable journal (page 263), and I would not have cared to correct him again if he would but plough his own ground and give honor to those who merit it. Dr. Ehrmann speaks of the erythrosin process from the illustrious Scolik, of Vienna, but wholly ignores Dr. Eder's name, who is the real discoverer of erythrosin as an optical sensitizer.

But perhaps the learned Doctor excuses himself with the assertion that he don't know Dr. Eder's researches. I would willingly agree to that if I had not found out a suspicious similarity between Dr. Ehrmann's article and one published on the same subject in the *Amateur Photographer* for April 15th of this year (No. 132) by Mr. Woodbury, in which Dr. Eder's merits, also the merits of others who have done more color-sensitive photography than the illustrious friends of the learned Doctor, are especially mentioned.

It is certain Dr. Ehrmann knows of Woodbury's paper; more than that, he has used and partly copied it. I here give the instances in parallel columns.

MR. WOODBURY'S PAPER.	DR. EHRMANN'S PAPER.
Amateur Photographer, *April 15th.*	*Read before the Photographic Section of the American Institute.*
"For many years it was considered impossible to remedy this defect* any way."	"For many years it was considered as impossible to remedy these defects,"* etc.
Woodbury says further:	Ehrmann says (*Photographic Times*, p. 262):
"But it cannot be denied that the discovery of the orthochromatic process is founded absolutely upon theories, and established wholly by experiments in spectroscopy.	"But we cannot deny that the discovery of the process is based absolutely upon theories, and has been established by experiments in spectroscopy.
"All these experiments were based upon one principle, *i.e.*, the addition of some substance to the sensitive film that possessed the power of absorbing and converting into chemical energy those rays which upon an ordinary plate had no effect.	"These experiments were based again upon one principle, that is, the addition of some substances possessing the power of absorbing and converting into chemical energy those rays which upon an ordinary plate have no effect.
"For this purpose a large number of dyes were found to be effective. Most of these dyes were of the aniline series, and are themselves sensitive to light, as proved by a bleaching action that takes place under its influence. This bleaching was found to be most effected by the red end of the spectrum, the very end that upon an ordinary plate has no effect. The real cause of this bleaching action of the dyes has been a matter over which considerable dispute has taken place. Dr. Vogel is of opinion that the energy absorbed in bleaching the dye is transmitted to the silver haloid, upsetting its equilibrium and rendering it capable of development."	"For this purpose a large number of dyestuffs were found to be most effective. They are themselves sensitive to light, for they bleach when exposed to it. Bleaching action was found to be strongest on the red end of the spectrum, which has no effect on ordinary plates. Dr. Vogel's most generally adopted opinion on this action is, that the energy absorbed in bleaching the dye is transmitted to the silver haloid of the plate, upsetting its equilibrium and rendering it capable of development."

But there are several other parts in Dr. Ehrmann's paper which are no more than repetitions of Woodbury's sentences in a little different words, for example:

Woodbury cites Dr. Eder's sentence:	Ehrmann (avoiding Dr. Eder's name) tells:
"In order to find out how small a quantity of eosine was sufficient, I prepared a stained emulsion, and from it I afterwards separated the bromide by the aid of Plener's centrifugal machine. This I continued to wash until the water was perfectly colorless. I then re-emulsified in fresh gelatine, and the result was that the plates were as color-sensitive as the original emulsion."	"Practical work, and Mr. Plener, with his centrifugal machine, showed how that but an extremely small quantity of color was requisite to give effects. In fact, after an emulsion had been colored, he separated from it the bromide of silver, re-emulsified it, and, with the infinitesimal amount of color combined with the silver, obtained the same effects."

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* The authors mean the wrong action of colors on photographic plates.

Further, Dr. Ehrmann speaks on the terms isochromatic and orthochromatic exactly in the same meaning as Mr. Woodbury on page 178 of the *Amateur Photographer.*

The only original part which I find in Ehrmann's paper is the comparison with the New Jersey cavalier.

I think I have sufficiently proven that Dr. Ehrmann has used Woodbury's article in a manner which would oblige him to mention Woodbury's name. He has not done it. But if the learned Doctor should further cite foreign papers in this way, I would advise him to do it more thoroughly. If so, he would have been obliged to reproduce the brief summary of Mr. Woodbury on the principal discoveries in color-sensitive photography. Mr. Woodbury says (*Amateur Photographer* for April 15th):

1873—Vogel discovered the optical sensitizer. He observed that certain dyes which absorbed the yellow, green, and red rays of the spectrum, made bromide of silver sensitive to these rays. He used at first coraline (for the green rays), and picrate of methyl green (for the red rays).

Vogel succeeded in photographing a piece of yellow tissue, decorated with a piece of blue ribbon, with a coraline-stained silver bromide collodion plate, the yellow photographing lighter than the blue. A yellow screen was interposed between the object and the lens. Vogel explained that any subject which absorbed certain rays of the spectrum would act as a sensitizer to bromide of silver for those rays.

1874—Becquerel showed by experiment that chlorophyl made bromide of silver sensitive to the red end of the spectrum, while orange, yellow, and green showed scarcely any action.

Vogel published as new sensitizers methyl violet and naphthalin red.

1875—Vogel recognized cyanin as a strong sensitizer.

Waterhouse, of Calcutta, published the fact that eosine was a strong sensitizer for the yellow rays of the spectrum.

1876—First application of chlorophyl and eosine to photochromacy, by Ducos du Hauron Fréres, and Albert, in Munich.

1879—Publication of the chlorophyl process by Ives. This was, perhaps, the first practical process. A collodio-bromide of emulsion plate was stained with an alcoholic solution of a green coloring made from leaves, called chlorophyl.

1880—First trial with optical sensitizer upon gelatine plates by Vogel.

1881—Application of eosine as sensitizer for gelatine plates by Clayton and Attout Tailfer, Paris (patent specification).

1883—Schumann's experiments with eosine-gelatine plates published.

1884—Publication of a practical eosine collodion process by Vogel, which obtained "prix d'honneur" from the "Verein zu Förderung der Photographie."

Vogel discovered azaline to be a new strong sensitizer for gelatine plates; and he introduced azaline plates into commerce.*

Eder published the sensitizing powers of *erythrosin*, pyrosin. methyl eosine, bromeosine iodeosine, aureosine, iodine green, phloxin, rose Bengal, hydrochlorate of rosaniline, and acetate of rosaniline.

1885—Introduction of *erythrosin plates* into commerce by *Eder*, Angerer, and others.

Schumann observed that eosine plates prepared by bathing are much more sensitive than those prepared with stained emulsion.

Publication of a cyanin bathing process by Schumann, and a method of photographing by artificial yellow light.

Vogel's observations regarding photographing by gaslight with azaline plates.

1886—Mallmann and Scolik published some observations upon plates prepared with erythrosin.

Obernetter's observations upon the value of isochromatic plates in landscape work.

Obernetter and Vogel's discovery of stained† gelatine plates, giving orthochromatic photographs without the necessity of a yellow screen placed between the object and the lens.

Vogel's eosine‡ process patented.

I remain, very truly yours,

H. W. VOGEL.

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* Here is forgotten an important fact. Vogel observes the very strong optical sensitizing power of eosine on gelatine plates. (Photographische Mittheilungen. xxi., p. 42.)

† The author means stained with eoside of silver.

‡ Here should be said eoside of silver.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

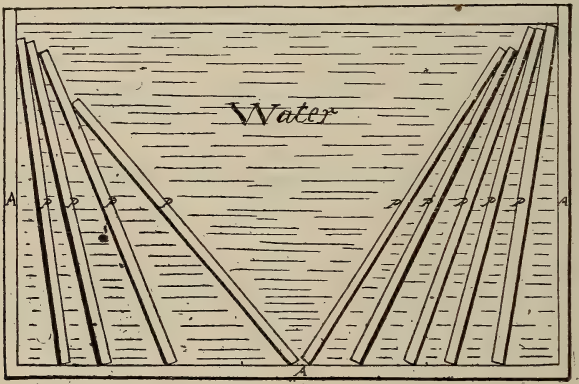
(Continued.)

Collodionizing.—This is done in the usual way, but for those who may be unfamiliar with it, the following directions should be followed. A well-dusted plate is taken, and holding it horizontally with the index, middle finger and thumb of the left hand, the collodion is poured upon it (in a steady stream and in sufficient quantity to well cover the plate) close to the left upper corner. Allow the collodion to cover this end of the plate, then incline it a little to the right side and the collodion will run to that corner. Now raise the upper part of the plate and it will run towards the end where the plate is held, and from there over to the right lower end, from which allow it to run in a second vial, which meanwhile had been taken in the right hand. A little practice will soon be acquired and not much collodion will be wasted. Plates up to 14 x 17 may be collodionized in this way. For larger plates a very convenient contrivance is a glass bottle with a cork, on which the plate is rested and directed by the left hand.

N.B. 1st. Always use filtering paper between your fingers and the plate, for if this is not done, spots frequently appear in the collodion where they have supported the plate, being due to the faster evaporation produced by the warmth of the fingers. 2d. Always pour enough collodion to fully cover the plate, for if you again had to pour on more, lines and marks would appear where the first and last pourings meet. 3d. Never pour the collodion on one place alone, for the ether might dissolve the wax on the plate and the picture would not separate.

Allow fully TWO MINUTES for each plate to get sufficiently dry, and immerse in the reservoir tray, proceeding as follows: Place the plate in an upright and slightly inclined position, collodionized side against the side of the tray, and see that it is well covered by the water; do the same with the following plates, which will easily be understood by a glance at the cut. Having immersed all the plates, they must remain in the water for *at least twenty-five minutes*, but no harm will ensue if they remain for hours.

FIG. 7.



A A A Tray. P P Plates.

The heavy lines indicate the collodionized side.

N.B. 1st. Allowing less than two minutes for the setting of the collodion would produce an opalescent appearance in the lighter parts of the carbon picture or breaking of the collodion film when separating the tissue for or during development. Allowing more time makes the collodion too horny and the carbon tissue will not stick to it. 2d. Be sure that the water in the reservoir tray is perfectly clean, and protect it against any dust while the plates are in it, for that would adhere to the collodion. 3d. When withdrawing a plate from the tray it must always be washed all over with clean water, which should run off freely from the plate and thus show that no more alcohol is present in the collodion film.

First Transfer.—Having filled the tray with clean cold water (58 degrees or less), and having subdued the light, take a carbon tissue sheet, dust it well on both sides, and immerse it, carbon side up, in the water. Use the camel's hair brush to remove any adherent air-bells. Turn it over, and repeat this operation, *always keeping it under water*, for if this is not done reticulation might appear.

The carbon paper first rolls up, but after about a minute it flattens out and then rolls up again, this time with the carbon side outwards. When it begins to lay flat, take a plate from the reservoir tray, give it a good wash with clean cold water, and lay it, collodion side up, on the table or developing board. The carbon tissue is now taken by two corners and the water allowed to run off, and as soon as only drops form it is laid carefully, carbon side down, upon the collodionized plate, care being taken that no air-bells remain between them. It is a good plan to hold the carbon paper by two diagonally opposite corners, and lower it, the center or sunken part first, upon the plate, and allow the sheet to lay flat by itself. Care must be taken that it is placed well upon the plate, for the collodion film does not stand much moving to and fro of the tissue paper. Should it be necessary to remove the tissue, in order to place it more accurately, it can be done, but before replacing it upon the plate it should be placed for a moment in the cold-water tray. Being in its right place, the tissue is now covered with the rubber-cloth (cloth side in contact with it) and the squeegee is now applied, striking always from the center towards the borders and using first gentle and afterwards a little more pressure. Bear in mind that the carbon tissue should never lap over the plate, and care must be taken to cut the paper always of such dimensions that, while wet, it is not so large as the transfer plate; $\frac{1}{8}$ to $\frac{1}{4}$ inch less each way will do. Remove the rubber-cloth and examine whether the tissue is in intimate contact all over the plate. Should some places show which appear as if a little raised, this indicates that there is air between the tissue and the plate, and the rubber-cloth and squeegee must be employed again.

If the desired result is not obtained, the paper may be removed by gently drawing with an upward motion, and being very careful not to break the collodion film. Then place the tissue paper again for one second in the cold water, carefully replace upon the glass plate, and apply the rubber-cloth and squeegee again.

If everything is found satisfactory, dry the borders of the paper and its back by means of a soft towel or sponge, being careful not to hurt the projecting collodion. The drying of back and borders of the tissue paper *must never be omitted.* Proceed in the same way with all the papers and plates and lay one on top of the other.

It sometimes happens that the borders of the tissue do not adhere to the collodion, and in such a case covering it with a glass plate and using pressure from a quarter to half an hour will be necessary.

Development.—Having made the transfer, fifteen minutes at least must be allowed before proceeding to the development, but an hour is better. The development may be made still later, provided the papers are covered with a glass plate to prevent them from drying. Developing sooner than ten minutes after the transfer generally causes reticulation. It is not necessary to use a plate for each tissue paper, for if there are, for instance, two pieces 5 x 8 of same exposure, they may be transferred upon a 10 x 8 plate. After acquiring a little practice in developing, no great difficulties will be met in handling plates on which two or more prints have been transferred, and which are of different impression.

As regards the development, it is good to again read over what was explained when describing the single transfer process, as the manipulations are exactly the same.

The alum bath must not be stronger than two per cent. The plates, after being immersed in it, are placed for half an hour in a tray containing clean cold water of 60 or 76 degrees F., each getting a good wash, and are then placed on the folding rack to dry, which takes about six hours. Never place the pictures face to face, nor put them in an air draught or too warm a room, or the prints might separate from the plates. The wet carbon pictures must also be carefully protected against dust, for it would be very difficult to remove any that might adhere to them.

Always use fresh water baths for each development, for if a picture is developed in the water which has been used for another, small carbon spots are likely to appear in the second one. It is rather difficult to free a picture of these small spots; applying a fine sable brush dipped in hot water sometimes succeeds, but not always.

(*To be continued.*)

THE ART OF MAKING PHOTO-GRAVURES.

By Ernest Edwards, *President of the Photo-gravure Company.*

(*Continued.*)

The process of Paul Pretch, in 1857, which he called photo-galvanography, was the first practical process introduced. His method was to obtain a gelatine relief by the means I have described, and treat such relief with tannin or other astringents. The effect of astringents on gelatine is to cause a corrugation of the surface more or less pronounced, in proportion as the gelatine is more or less insoluble; that is, more or less as light has acted. This corrugation or crinkling gives a grain or ink-holding capacity to the printing plate, which is obtained by a deposit of copper on the surface of the corrugated gelatine. The results produced were fair, but the process only attained a moderate degree of success. It was valuable mostly as being the forerunner of the Goupil process of photogravure, by which such magnificent results have been obtained; a process which of itself has revolutionized the methods of art reproduction and gone far towards extinguishing the school of copper-plate engraving. The process of Goupil is substantially that of Pretch, but his means of obtaining the grain are not known. The Goupil process is undoubtedly a deposit process, and it is believed that a chemical grain is obtained on the gelatine relief. On the other hand, I have heard it stated that the grain is produced by a device invented by the Englishman, Woodbury, the inventor of the ingenious and beautiful Woodbury process. In either case the results leave nothing to be desired, though it is evident they are obtained by a great and costly expenditure of hand-work, as well as the use of the best appointed combination of men and materials in the world.

With Klic, of Vienna, may be said to have culminated that other process of producing photo-gravure plates, known as the etching method. Instead of depositing copper on a surface of gelatine, a polished copper plate is used to start with, and the photographic design is photographically etched or engraved on it. The grain or ink-holding capacity is obtained by a device similar to that used in the aquatint process of engraving, a process now practically extinct. The device consists in pouring over a highly polished copper plate a liquid composed of resinous gum dissolved in alcohol, which latter evaporating leaves the resin spread all over the plate in minute grains that resist the action of the etching fluid, which, however, corrodes the bare surface of the copper that is left between them. This granulated surface is called a ground, and in photo-gravure constitutes the necessary grain. To the surface of the copper plate thus grained is transferred a gelatine picture in relief and depression. The whole is placed in an etching bath, the etching fluid acting most where the gelatine has been left most soluble and least water-proof, and acting least where the gelatine has been most acted on by light and is most water-proof. The specimens which are exhibited to-night, and the plate which will be printed in your presence, are both produced by this method, which rivals in its results those produced by the deposit process, at the same time that it is more quickly and economically worked. As Pretch was the originator of the deposit method, Fox Talbot was the originator of that of etching. Fox Talbot coated a polished copper plate with the usual solution of gelatine and bichromate, and produced the image or design by means of light in the usual way. His first method was to wash away those parts of the gelatine not acted upon by light, but he struck the keynote of success in a subsequent improvement, which he describes as follows:

"When the plate bearing the photographic image is removed from the copying frame, I spread over its surface carefully, and very evenly, a little finely powdered gum copal, in default of which common resin may be employed. It is much easier to spread this resinous powder evenly upon the surface of the gelatine than it is to do so upon the naked surface of a metal plate. The chief error the operator has to guard against is that of putting on too much of the powder. The best results are obtained by using a very thin layer of it, provided it is uniformly distributed. If too much of the powder is laid on, it impedes the action of the etching liquid. When the plate has been thus very thinly powdered with copal, it is held horizontally over a spirit lamp in order to melt the copal. This requires a considerable heat. It might be supposed that this heating of the plate after the formation on it of a delicate photographic image, would disturb and injure that image, but it has no such effect. The melting of the copal is known by the change of color. The plate should then be withdrawn from the lamp and suffered to cool. This process may be called the laying an aquatint ground upon the gelatine, and I believe it to be a new process. In the common mode of laying an aquatint ground, the resinous particles are laid upon the naked surface of the metal before the engraving is commenced. The gelatine being thus covered with a layer of copal disseminated uniformly, and in minute particles, the etching liquid is to be poured on."

You see we have here the aquatint device for graining, the keystone of success for his process, though possibly not understood to be so by him. Mr. Talbot then goes on to describe minutely the methods and the preparation of the chemicals used for etching, and I can say that his description, given nearly forty years ago, will serve as a text-book for the etcher of to-day. Altogether his process is marvellously close to the method of producing photo-gravure plates by etching, as now practiced.

It will be interesting to note briefly the more important devices that have been proposed for obtaining the necessary grain, as well as the more novel of the methods for making plates besides the deposit and etching methods.

Mr. Woodbury's device for producing a grained, ink-holding intaglio plate, is as follows: A gritty powder (crushed glass, for instance) is incorporated with the gelatine used for making the gelatine relief. A leaden reverse is then taken by pressure from the grained relief, and the leaden reverse is reproduced by a two-fold electrotype. This reproduction of the leaden reverse is the printing plate.

This is the process which is alleged by some to be the one in use by Goupil & Co., but in my judgment the allegation cannot be sustained. To obtain the leaden relief, the most powerful hydraulic pressure must be used, and I am unaware of any Woodbury reliefs having been made larger than a foot square. Yet Goupil's reproductions are frequently ten and twelve times as large as this. Again, many of Goupil's plates bear conclusive evidences, to my mind, of the grain having a chemical rather than a mechanical origin. Colonel Waterhouse, in charge of the Survey Office at Calcutta, has been successful in making intaglio plates, and he has published the details of his method. The process is a modification of that of Geymet, and it is based on the mechanical reticulation or breaking up of the gelatine relief. Mr. Bolas describes the process as follows:

"An ordinary carbon print is developed on a polished plate of copper, this being thinly plated with silver in order to prevent its adhesion to the electrotypic copper which is afterwards to be deposited on it. While the carbon print is still wet, fine sand is dusted on it, but the sand has been previonsly waxed or stearined, to prevent its permanent adhesion to the gelatinous matter which constitutes the body of the carbon print. When all is dry, the sand can be removed by a gentle friction, leaving the gelatine in a honeycombed, or grained, condition. Black-lead is next gently rubbed on the picture, and this substance readily adheres to the gelatine, where its presence is required to render the surface conducting, but it refuses to attach itself to the metal plate, where indeed it is not required. An electrotype cast is next taken from the metallic plate which now bears the grained carbon print, and this cast constitutes the printing plate."

Mr. J. B. Sawyer of the Autotype Company, of London, recently patented a method quite analagous to this, but he substitutes graphite for sand, mixing it into the gelatine used for the production of the relief instead of sifting it on to the finished relief. In 1884, Dr. Vogel writes of what he calls the newest thing in Munich.

"The newest thing in Munich," he says, "is the photo-engraving process of Obernetter, a copper-plate method for the reproduction of subjects in half-tone, the results being similar to those obtained by Goupil. Obernetter calls the method Lichtkupferdruck, and it differs widely from Goupil's process, as the latter consists in making an electrotype reproduction from a grained relief, an operation which takes some weeks, but Obernetter prepares his plates by etching, and this is an entirely novel method. He transforms a diapositive image in gelatino-bromide into chloride of silver, strips the film from the glass and places it upon a copper plate. Under the influence of an electric current, the chloride of silver is decomposed, the chlorine uniting with the copper and etching the plate to a greater or less depth, according to the thickness of the deposit of chloride, the result being a grained intaglio plate capable of giving the most delicately graduated impressions."

Amongst the methods for the reproduction of plates having lines only, should be mentioned that of Scamoni, of St. Petersburg and that in use in the Government Laboratory in Vienna. Scamoni makes a positive, or transparency, from a negative of a line subject. On the lines forming this positive picture, metallic silver is still further deposited till a height has been obtained, sufficient, when an electrotype cast is made from it, to give a depth to the lines capable of holding sufficient ink. Very fine, sharp, clean-cut results have been produced by Scamoni.

At the Government Printing Office in Vienna a carbon positive is developed on a silvered copper plate, a daguerrotype plate in point of fact. Thus we obtain the lines in relief on the silvered surface. This is rendered conductable and an electrotype cast obtained from it, in which, of course, the lines are in intaglio. This method has been used successfully for map-work.

One of the later methods of producing an ink-holding surface is by the interposition, at the proper stage, between the negative and the plate, of a screen of finely ruled lines, or network of lines, which then take the place of the grain, the intention being to produce an effect similar to the fine tint-ruling of a steel plate. My own experience is that it is impossible, through the intervention of photography, even to approach the clean-cut work of the graver, when this is used directly on the metal plate, just as it is impossible for the graver to approach that photographic effect which is the great charm of a photo-gravure.

But of all these processes, with all the ingenious devices invented in connection with them, two only remain in general use to-day. One is the deposit, the other is the etching process. I venture to predict that finally the etching process will be master of the situation. Letting alone the greater facility and economy of production it offers, the results produced by it are equally good in the case of reproductions, and better in the case of photographic work directly from nature or life. I have stated that the etching process is the one used by our Company, and the results are before you. I am bold enough to say that photo-gravure work in America to-day equals any in the world in the matter of reproductions, and excels any in the world in the matter of pure photographic work. I shall ask your patience a moment longer whilst I describe broadly our method of producing a photo-gravure plate.

(*To be continued.*)

ON RED AND PURPLE CHLORIDE, BROMIDE, AND IODIDE OF SILVER—ON HELIOCHROMY, AND ON THE LATENT PHOTOGRAPHIC IMAGE.

BY M. CAREY LEA, PHILADELPHIA.

(*Continued.*)

Photochloride by Partial Reduction of Oxide by Heat, and Treatment with HCl.

This method has the advantage of avoiding all admixture of foreign substances, the last traces of which are very hard to get rid of, and seem to exert an effect on the color disproportionate to their quantity. Accordingly the photochloride obtained in this way is very beautiful; the shades are from pink to copper-red, and a tint resembling burnt carmine.

Heat may be applied to the oxide in either of two ways: long continued heat at 212 degrees F., or near it; or the change may be effected by roasting.

When slow heat is to be applied, care must be taken that the oxide does not carbonate itself, which it easily does superficially; this is an objection, because the carbonate under these circumstances yields white chloride, with which the other becomes mixed. The air of a drying oven heated by a gas-burner is especially bad in this respect. I have seen a surface of oxide form a coat of yellow carbonate in a few hours in this way. (Most oxide that has been kept for some time will effervesce briskly with an acid.) The method is uncertain, sometimes giving strongly colored products, and sometimes pale pink.

The oxide may be roasted in a shallow, flat-bottomed porcelain basin. With a very moderate heat it changes from brown to black. When this is thoroughly accomplished, and before gray reduction sets in, the oxide is to be treated with HCl. If this be done in the basin itself after cooling, and without disturbing the position of the oxide, a curious variety of tints will be noticeable, depending upon slight differences in the heat affecting different portions.

Silver carbonate may be roasted in the same way as silver oxide, and yields a similar product. By heat its color changes from yellow to black. It is probable that the carbonic acid is driven off at a lower temperature than that at which oxide is reduced to silver, and that with it escapes part of the oxygen. The residue is converted by HCl into deep red chloride.

Action of Various Metallic Oxides on Silver Oxide.

If we precipitate ferrous oxide with potash, and add to this silver oxide; or, what amounts to the same thing, if we add to ferrous sulphate potash in excess, and pour over this nitrate solution, the silver oxide separated by the potash is partly reduced by the ferrous oxide, and when treated with HCl forms red chloride, the intensity of the color of which depends, within certain limits, on the amount of reduction on the silver oxide.

Similarly, if we treat solution of manganous sulphate with excess of potash, and then add silver solution, we get an analogous reaction, except that it is much weaker, and heat is necessary.

With chromous oxide the action is still weaker, but evident. With cobaltous oxide it is scarcely perceptible without heat and long continued action.

ACTION OF FERRIC CHLORIDE ON METALLIC SILVER.

It has been long known that silver was blackened by ferric chloride, and this action has been proposed in the text-books as a means of obtaining subchloride, for which it is quite unsuited.

Ferric chloride acts on silver much as sodium hypochlorite does, but less rapidly. With hypochlorite the action is complete in a few hours, or often in an hour or less; with ferric chloride one or two days are required before the product ceases to yield silver to hot dilute nitric acid. In both cases the action seems to be alike in this, that no subchloride is finally left uncombined with normal chloride.

The product is an intensely dark purple-black when the action takes place in the cold. With heat continued for many hours, ferric chloride can be made to attack the purple salt, and gradually convert it into AgCl. With a strong solution in large excess, kept at or near 212 degrees F. for sixty hours, the color was gradually reduced to pink, and finally to a dingy pinkish-gray. Pure white cannot be obtained, as it can by aqua regia.

In order to observe more exactly the course of the action, a strong solution of ferric chloride was allowed to act on reduced silver in fine powder for four minutes, and then a fresh portion (always in large excess) for the same time. Analysis showed that at this stage of the action the material contained

Ag (determined)	76.07
Cl (by difference)	23.93

If we suppose that all the silver was combined with chlorine, the constitution of the substance would be

AgCl	92.49
Ag_2Cl	7.51
	100.00

but this was probably not the case; there was almost certainly free silver present, and consequently a less proportion of subchloride. Another specimen, treated repeatedly with hot acid until every trace of free silver was removed, was found to contain 1.52 per cent. of subchloride, color purple. Another similarly treated contained 7.3 per cent. subchloride.

ACTION OF NITRIC ACID ON SILVER SUBCHLORIDE.

When freshly precipitated and still moist subchloride of silver is treated with nitric acid, a sharp effervescence, accompanied with a disengagement of red fumes, sets in; presently the strong red coloration of the photochloride appears, and the action ceases. This production of the red and not the white chloride in the decomposition of Ag_2Cl is precisely what might have been expected, for when AgCl is formed in the presence of Ag_2Cl, more or less combination always takes place.

The action is interesting in this respect: the AgCl first formed is, at the moment of formation, in presence of all the yet undecomposed portion of Ag_2Cl, and whatever part it combines with is removed from the action of the acid. It would therefore seem probable that this method would be one of those that yielded a product having the largest proportion of Ag_2Cl, but analysis showed that different specimens were extremely variable; of those analyzed one contained 8.62 of Ag_2Cl, another 6.56, and a third 1.96. All that analysis can do with such substances is to fix the limits within which they vary. The quantity of subchloride left after treatment with nitric acid depends partly on the strength of the acid and the time for which it is allowed to act, but also, to some extent, on variations in the resistance of the substance itself. These specimens were of shades between rose and purple.

The color of any particular specimen is always lightened in shade by abstracting Ag_2Cl from it by continued boiling with nitric acid. But as between different specimens (especially when formed by different reactions) it by no means follows that the darkest in color contains the most subchloride.

Argentous chloride when treated with sodium hypochlorite yields a purple form of photochloride. A specimen so treated contained 2.57 per cent. of Ag_2Cl.

ACTION OF CUPRIC CHLORIDE ON SILVER.

When metallic silver is submitted to the action of either cupric chloride; or, what gives the same result, a mixture of copper sulphate and ammonic chloride, an action takes place very similar to that of ferric chloride, but more energetic, and the resulting red chloride is apt to be lighter in shade, though in this respect it varies very much. As in the case of ferric chloride, this action of cupric chloride on silver is given in some text-books as a means of obtaining argentous chloride, for which purpose it is as little suited as the iron salt.

As a mode of obtaining the red chloride it is not to be recommended. It is troublesome to get the copper completely removed.

A specimen analyzed was found to consist of white chloride with 6.28 per cent. of subchloride.

ACTION OF PHOTOCHLORIDES ON SILVER SOLUTIONS.

Cuprous Chloride.—When very dilute solution of silver nitrate is poured over cuprous chloride, a bulky black powder results, which by boiling with dilute nitric acid turns red, the acid extracting little or no silver.

Ferrous Chloride.—When silver nitrate is dissolved in a slight excess of ammonia, and this solution is poured into a strong one of ferrous chloride, there results a precipitate which is sometimes grayish, sometimes olive-black. By washing with dilute sulphuric acid, this product becomes brownish-purple, and brightens by boiling with dilute nitric acid. It was found to contain 4.26 per cent. of subchloride.

PHOTOCHLORIDE BY ACTION OF HYDROGEN.

When hydrogen is passed over argentic citrate at 212 degrees F., as in Wöhler's process, there results a black or dark brown powder, consisting of argentous citrate, metallic silver, and perhaps other substances. When this is treated with hydrochloric acid, and subsequently with nitric acid, the resulting product is photochloride, the characteristic color of which sometimes appears as soon as the HCl is added. But more frequently the material after its action has precisely the appearance of silver reduced in the wet way, and the red color appears only after treatment with nitric acid. Even cold dilute acid (by some hours' contact) will isolate the red chloride; boiling acid does so at once.

Color, beautiful purple. A specimen analyzed was found to consist of normal chloride combined with 3.11 per cent. of subchloride.

(*To be continued.*)

* * *

A TRAMP was recently discovered in Connecticut with a bank book in his pocket showing a deposit to his credit of $1,500. He was actually too lazy to draw the money out and buy a square meal. The fatigue which pertains to a well-developed tramp is one of the most remarkable phenomena in social life.

THE PROPER TIME FOR EXPOSURE OF DRY PLATES.

BY LIEUTENANT C. L. BRUNS, U. S. N.

[Read before the Society of Amateur Photographers of New York.]

Can a close approximation of the time of proper exposure be determined scientifically?

The object of this paper is to give briefly a history of some personal experience in this direction.

I would premise that the practice of photography is based entirely on variables, which is particularly unfortunate with the amateur, whose work is only occasional and with subjects constantly changing. He therefore learns nothing definitely by his previous work; his experience is of but little service to him, as he is constantly confronted with variables.

To reduce the variables has prompted me to experiment upon the actinic effect of light. I have tried several plans, and finally adopted a very crude sensitometer, which, however, has served me very well.

The sensitometer referred to is albumen paper freshly prepared for each day's work. This involves but little trouble or time; a strip cut from a sheet of albumen paper, say one inch by six, put in a jar containing the sensitizing solution (nitrate of silver of some fixed strength) for an indefinite time, is drained and dried, and not to be fumed. Place the sensitized slip of paper between two flat pieces of wood bound together with rubber bands; pull the paper out to protrude say one-half inch. Expose this to the sun until it has blackened all it will, and call it actinized. Now pull out one-half inch more, expose it to the sun and note the time. I find it convenient to stand back to the sun, or facing north, and place the paper on the ground at a distance of four feet from the point where I stand, and maintain this as a constant, and then wait until the newly exposed paper reaches the color of the first, or is actinized, noting this time, which interval I will say is one minute. Suppose, now, I desire to take a copy of a picture in my room. I have here an ordinary plate holder so arranged that any portion of the sensitive plate may be shielded, while the rest may be exposed. In the dark room I shield all but the lower fourth part of the plate, I then expose it in the camera, say ten seconds, and take the plate to dark room, raise the shield, exposing this time two-fourths, or one-half of the plate. Returning to the camera I expose 10 seconds, thus giving 20 seconds to the first fourth, 10 seconds to the second fourth; proceed the same with the third fourth, exposing 10 seconds; then the fourth fourth, or the whole plate, exposing a few minutes with cap on, or it need not be exposed in camera at all. In the former, on developing, if the camera leaks it will show on the fourth fourth; in the latter, then the dark room lets in actinic light. Now the first fourth being exposed three times, each of 10 seconds, or 30 seconds; second fourth 20 seconds; the third fourth 10 seconds, the plate being developed will show which section was most favorably exposed. Assume this section to be the second fourth, or 20 seconds. We now arrive at the conclusion that when a piece of sensitive paper takes one minute to actinize, then say (Mr. R.'s) plate, registering sensitometer 16, requires 20 seconds for a proper exposure. On some subsequent occasion I desire to make a copy of a similar subject. Exposing a paper, the time to actinize is two minutes. I know that with (R.'s) plate, registering sensitometer 16, when the paper actinizes in one minute it should be exposed 20 seconds, and from the following proportion the proper exposure of the plate of subsequent day is determined, viz.: 1 minute to actinize is to 2 minutes to actinize, as 20 seconds (the trial exposure) is to the proper exposure, or 40 seconds, which is the time to properly expose on the subsequent day. Therefore all that is necessary on the subsequent day is to focus and expose 40 seconds and we have a properly exposed plate.

. For outside work, using slow plates, follow the same procedure, but expose three plates. For economy use small plates. Make exposures of sensitive paper before and after the plates were exposed, to be certain the conditions did not change. Obtain the time to actinize the paper, and the time of the best of these plates. This gives a positive condition for that plate, and that character of subject. On a future occasion, by exposing a sensitive paper, the actinic condition of the light and the time of exposure is obtained by the law of direct proportion. That is, as the time of exposure of sensitive paper to a certain actinic effect on the trial plate is to the time of a subsequent exposure of paper to an actinic effect, so the time of proper exposure given by the trial plate is to four, or the proper time to expose the plate on a subsequent occasion, the character of subject being considered similar. The character of subject may be determined to suit the individual taste; for instance, a marine view, clouds, foliage, bright sunlighted scene, or scene entirely in shade. If trial exposures are made for each, and carefully noted, there should be no difficulty, by reference, to obtain the time of correct exposures

For rapid work I place great reliance on the proper selection of the shutter-spring. Its action should be uniform. It does not matter so much how fast it is, but that its tension should be constant. Fix the spring permanently. A rubber band is bad; it is deceptive, and subject to wide changes and irregularities. Graduate the time by the diaphragm, and not by varying the tension of the spring. In the trial exposures use, say, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$-inch stops. The areas of these are to each other as the squares of their respective diameters, and are respectively $\frac{1}{64}$, $\frac{1}{16}$, and $\frac{1}{4}$ of an inch. The amount of light that passes through stops is directly proportional to their areas, hence the $\frac{1}{8}$-inch stop is four times faster than the $\frac{1}{4}$-inch, and sixteen times faster than the $\frac{1}{2}$-inch stop.

Now proceed with the trial plates.

Interiors.—Expose the sensitive paper in the room on the wall directly in front of the lens. Make a trial exposure as explained under copying. Let the exposures be, say, half-hour apart, or what the experimenter may conclude as best. Note the time it takes the sensitive paper to actinize and the time of the exposure as given by the trial plate, and then by the rule suggested you can obtain the time for proper exposures in any other interior.

In conclusion, I would recommend you to make a copy on the shielded system as applied in this plate holder, and you will be more than pleased to note the effect of the developer and the results. You will also see how much longer the zone of proper exposure is than you believed. You can tell what the actinic difference is; whether your windows are open or shut in the studio; and the range of time of any particular plate by which a proper picture may be secured.

Remarks on Lieutenant Bruns' Paper.

BY D. H. WALKER.

To reach the maximum exposure any plate will stand has been one of the difficulties in the way of all photographers. When you have put your plate in the holder, the first question presenting itself is: "What stop shall I use?" Next: "How long an exposure shall I give this plate."

If you are in doubt you ask your learned and experienced friend near by, and he puts his finger alongside his nose, looks wise, examines the sky as if he were in search of a comet, and then coolly suggests: "Well I guess (and it is all guess) I'd give her say ten seconds."

Now your own idea had been two minutes' exposure. If you ask four different persons, all of equal skill, they will "guess," at a variance of from 50 to 100 per cent. Now how ridiculous this appears to be, and is. Here is a science based upon exact chemical laws, and yet we are constantly guessing.

How to overcome that part of the guessing which relates to the exposure of a given plate has been the subject of inquiry and experiment by Lieutenant Bruns and myself, with the object of presenting the results for your information and discussion.

Experiments made yesterday by us demonstrated that to actinize sensitized paper required 107 seconds. A Carbutt B plate (16 sensitometer) exposed in parts for two, four and six seconds, on development gave best results and clear detail on that portion which was exposed for four seconds. Thus we had the two constants or non-variables for that kind of plate, they being 107 for the paper and four for the plates. Now these results are to be utilized as the basis of all calculations for exposure of such plates; and the process of arriving at the correct time for exposure on some other day, when the light may be different, will be as follows: Say next week on a dull day I wish to make a correct exposure of a similar plate. To do this I first expose a piece of the sensitized paper as explained. Say it takes five minutes to thoroughly actinize it, which is equal to 300 seconds. Now I have learned that this day it required 300 seconds to do what on another day requires only 107 seconds. I therefore make the figures to ascertain the required exposure to be given, to wit, as 107 is to 4 (these being the constants) so is 300 to the required exposure, and the answer is thirteen seconds. So that yesterday I would give four seconds' exposure, and next day, as per example, thirteen seconds.

With such experience as we have had, we feel satisfied this method is approximately correct. And I am certain, as experiment has proved, that the larger the constants the greater is the margin for correct exposure of the plate when taking a picture. That is, if the constants are ten times greater than those given, say 1,070 seconds and 40 seconds, the chances of correct exposure are increased in that ratio. An experiment made to-day with a new lens and camera showed that it only required 90 seconds to actinize the sensitized paper, and that a Carbutt B plate exposed seven seconds with the smallest stop (being only $\frac{3}{32}$ of an inch in diameter) gave the best negative. The two figures being used as new constants, a further experiment was made by exposing the sensitized paper in the shadow of our working room. After exposure of 18 minutes and 42 seconds, the paper showed partial actinization. As time was pressing (at 4 o'clock P.M.), a piece of paper was taken into the sunlight and was allowed to actinize up to an apparent similar extent, which required 20 seconds. At the same time a fresh piece of paper required two minutes in sunlight to become fully actinized. It will therefore be noted that the piece of paper exposed in the room, which had been partially actinized, if taken into the sunlight would have reached actinization in two minutes, or 120 seconds. And as it required two minutes to fully actinize, it had been exposed to within 16$\frac{2}{3}$ per cent. of complete actinization.

Multiplying this partial actinization of the paper (say 16.67) by 6, we show that it would require about 112 minutes, or 6,732 seconds, to actinize in the shadow of the room. Again using these figures, we show that as 90 seconds required to actinize in full sunlight is to 6,732 seconds, so is the time of proper exposure determined this morning, say seven seconds, to the time of proper exposure this afternoon in the shadow, which is 8 minutes and 44 seconds.

To summarize these figures, we may say that the simple sensitometer adopted, that is, the silvered paper, will give a very near proximate of the proper time for exposure of any given plate when taken in connection with the standard time of actinization, which we call a constant, and the exposure of the plate mentioned, as in the shadow of the room, was done without any other than this simple means. There need not be any doubt as to the use of the stops; one single stop will do for all exposures, when once this constant is obtained with any one of the series. So far as we are able to judge at this time, we prefer using the pin-hole stop, which has given the results mentioned above. If any man ask, "Well, what of all this?" we can answer that it is an approximate method of arriving at the proper time for exposure of a given make of plates, and that too without any "guessing." In presenting this for your consideration we are not unaware that others have experimented in the same direction, nor that the emulsions on plate and sensitized paper are chemically different, but we are anxious to broach the whole subject for your consideration, hoping it may lead to investigation and some useful result.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

SOME PHOTOGRAPHIC HERESIES.

BY CHARLES TRUSCOTT.

[Read before the Photographic Society of Philadelphia,]

Any photographic theory or opinion opposed to the generally accepted one may be called a kind of heresy, and the heresy of one year frequently becomes the orthodoxy of the next.

The average professional photographer is generally a very conservative individual, slow to accept anything new, or to adapt himself to a new order of things, and yet possessed of more than the average share of ingenuity. This conservatism may arise from the scarcity of writers on photography who are good at making photographs, many of our best photographic writers being proverbially but indifferent photographers. The consequence of this is a large proportion of very fine writing, not without its value to the art-science perhaps, but which is either misleading or ridiculous to the practical worker. Correct theory is, of course, very useful to the intelligent workman; but a false theory is neither ornamental nor useful, and a theory founded on imagination or superficial experiment is very apt to be false.

Many of us can remember when a collodio-bromide and gelatino-bromide emulsion experimentalist was regarded as a kind of fanatical searcher for the photographic philosopher's stone, and the possibility of producing a dry plate to equal wet collodion in sensitiveness was looked upon as on a par with photography in natural colors. The journals were half full of the heresy of emulsion photography, but nobody but enthusiasts would read such rubbish until Charles Bennett announced photographing an interior by gaslight, and, what was more, showed the results before one of the London photographic societies, when the photographic world began slowly to awake to the fact that it was on the eve of a great photographic revolution. Then, as there was no denying the rapidity of the new gelatine dry plates, those who had mastered the wet collodion process, but had not the energy or ability to acquire at once the skill to do as good work by the new process, naturally blamed it, and denied the possibility of its producing such good results, and there still are plenty of photographers in this city to-day who profess to believe the same.

When steel pens were introduced, there were for years many who still clung to the old scratching quill, but it was buried with them.

I propose to let wet collodion, for negative making, bury itself, having been among the first to dispense with it for that purpose.

Gelatine Plates.—Photographers generally are afraid of a very rapid plate for general work; they say that qualities such as sparkle and latitude have to be sacrificed to rapidity. I do not believe a word of it. I hold that a good rapid plate is capable of doing all that a slow plate is, and much more beside. Then why ride a mule when you may have a good horse for the same money? It is like some beginners I know who are very anxious to possess a lens of great rapidity; they obtain one, but never, under any circumstances, think of using it with any but the smallest diaphragms. They have two good legs, but are afraid to walk, and so hop about on one; or they may be likened to a man who uses steam power. When his boiler has been tested to 400 pounds, running with safety at 100 pounds pressure, he is afraid to work at more than 25 pounds, and, as a consequence, is always short of steam to drive his engine and machinery efficiently. Gentlemen, how many photographers are there who take full advantage of the great rapidity of the modern dry plate of to-day? Very few. Indeed, I hold they cannot do so with the appliances which are on the market.

Sometimes we are told that "gelatine has ruined the business." What enlarging the scope and power of the photography has ruined it! Did the collodion process ruin photography? It ruined the daguerreotype process But photography? Not much. Gelatine may, and will, supersede collodion for negative-making. It cannot ruin photography, but is a new power and blessing to the photographer and the world, and we do not yet know half its capabilities.

Development—Another heresy of mine is concerning development. Development is not the simple matter some people would have us believe. It is a little science in itself, and not to be learned in a year. Now it is generally understood that slow development is the best treatment for a minimum exposure. My practice is directly opposite to that, inasmuch as I invariably use the most energetic developer I can compound and the plate will stand for such a case. I have no faith in homœopathic development as a remedy for general debility in the latent image. Did we use a weak developer for under-exposure on wet collodion plates? No; but both strong and hot, because it was right in theory and practice.

The amateur photographic epidemic is regarded by many professional photographers with a great deal of misgivings, one even going so far as to say, "Amateurs are ruining the business." Now I have had considerable opportunity of forming a correct opinion on this point; and while I admit there is a certain class of mercenary plate spoilers, calling themselves amateurs, who expect their camera to earn its own fodder, or who go to Florida, or some other health resort, with the intention of making photography pay part of their expenses, yet I do not admit that calling themselves amateurs will make them such in any sense of the word. They are professionals, to all intents and purposes, for the time being—professional quacks, sailing under false colors. I have no doubt that they do some little injury to the business by cultivating the popular idea that photographs do not cost much to make, and that if a man has good instruments and plenty of light, he has every requirement to make good photographs. This idea the genuine amateur is doing yeoman service to correct. See how he is educating the public taste to discriminate between good and bad photographs. Then look at the number of those who buy expensive instruments, and yet never, or only after much experience, produce good photographs. Is not that teaching the public (what they are slow to learn) that skill is an important factor in their production? And when the public are able to recognize the qualities of photographs, and appraise them at their intrinsic value, then the profession will be ruined to all incompetency, whether called amateur or professional, and the skilled workman will find his hands full and prices good.

(*To be continued.*)

OBITUARY.

D. A. CLIFFORD.

On Sunday afternoon, June 5th, there passed away one of the most genial men it has ever been our good fortune to meet, Mr. D. A. Clifford, the veteran and well-known photographer of St. Johnsbury, Vt.

Mr. Clifford was born at Wentworth, N. H., in the year 1826, and learned photography in Salem, Mass. He went, in 1870, to St. Johnsbury, where he has lived ever since.

One who knew him well, writes:

"The death of Mr. Clifford removes a man of mark in his profession, a citizen whose artistic productions have widely extended the reputation of St. Johnsbury. He was a man of native gifts. Before his eighth year he could read music accurately, and at seventeen began teaching singing with such success that, after a while, Dr. Lowell Mason sent for him and for some years retained him as conductor of musical conventions and agent for his publications.

"Mr. Clifford's life-work, however, was in artistic photography, for which he had an enthusiasm amounting to a passion. He began with the introduction of the daguerreotype, some forty-five years ago, and made himself master of every new process to the time of his death. Among one hundred and sixty-seven exhibitors, American and English, who entered their pictures at the exposition given by Lambert, inventor of the carbon process, at New York in 1878, the first prize for large carbon work was awarded to Mr. Clifford, and two of his pictures were kept by Mr. Lambert to be exhibited abroad as specimens of American photography. He died of heart disease, aged sixty-one, having lived in St. Johnsbury about eighteen years, and is buried at Wentworth, N. H."

He leaves a widow to mourn his loss, and to whom we tender our heartfelt sympathies. Mr. Clifford will be missed very much at the meeting of the Photographers' Association in Chicago, for he was a man who took a lively interest in these Conventions, and was always an interesting speaker upon any subject under discussion.

OUR ILLUSTRATION.

The example of children's pictures which we present to our readers with this issue of the Bulletin is made by the well-known New York photographer Hugh O'Neil, of Union Square. He is particularly successful with children, and the specimen of his work which we give was made without a rest, as fast as the lens could be opened and shut. The result speaks for itself.

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RAILROAD ARRANGEMENTS TO CHICAGO.

We have received from Mr. G. M. Carlisle, the Treasurer of the Photographers' Association of America, the following list of roads which will accept return tickets issued under the certificate plan:

Baltimore and Ohio (east of Parkersburg, Bellaire and Wheeling); Baltimore and Potomac; Buffalo, New York and Philadelphia; Buffalo, Rochester and Pittsburgh; Camden and Atlantic; Delaware and Hudson Canal Company; Delaware, Lackawanna and Western; Fitchburg; Grand Trunk; Lehigh Valley; New York Central and Hudson River; New York, Lake Erie and Western; New York, Ontario and Western; Norfolk and Western; Northern Central; Pennsylvania (except locally between Philadelphia and New York); Philadelphia and Erie; Philadelphia and Reading (except locally between Philadelphia and New York); Philadelphia, Wilmington and Baltimore; Rome, Watertown and Ogdensburg; Shenandoah Valley; West Jersey; West Shore.

Under the certificate plan, those desiring to go to Chicago will have to buy a regular ticket, for which they pay full price, and a certificate furnished by Mr. Carlisle, and signed by the agent in New York, will entitle a member of the association to a return ticket from Chicago at one-third of the regular rate, provided the certificate furnished by Mr. Carlisle and signed by the New York agent is finally signed by Mr. Carlisle in Chicago. Any further information can be obtained from G. M. Carlisle, Providence, R. I.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Chicago Convention.

Important Notice to the Photographic Fraternity.

To avoid misunderstanding of the adopted rule that exhibits competing for the Association Prizes at the coming Chicago Convention must be without frames or glass, it is hereby announced that pictures may be fastened on boards covered with cloth or paper, and that a neat molding, not exceeding one inch in width, may be put around the edge of board to give it a finish.

In regard to the rule preventing anything of an advertising nature in the halls devoted to the display of photographs, and allowing only one card, not more than seven by twelve inches in size, to every exhibit, with only the name and address of photographer whose work is represented, this shall not prevent the use of card mounts bearing the photographer's name and address.

THE EXECUTIVE COMMITTEE P. A. of A.

THE BLAIR PRIZE CUP.

COPY OF LETTER OF MR. BLAIR CONCERNING THE PRIZE.

To the Executive Board of the Photographers' Association of America.

IN compliance with your letter bearing date May 27th, in which you suggest that I put the offer of the prize cup into proper shape for action at the coming Convention, I beg to say that as several correspondents have suggested that the cup remain the property of the successful competitor, I have, after considerable thought on the question, decided to leave the final disposition of the cup entirely in the hands of the Photographers' Association of America, and would name only the following rules to be observed.

First.—The cup shall be competed for at, at least, three different exhibitions, at intervals to be named by a vote of the association.

Second.—No contestants shall be allowed to place conspicuously on his exhibit the name of the apparatus or materials used in making the pictures.

Third.—No pictures having been previously entered for competition shall compete for the prize cup.

The class or classes which shall be allowed to compete shall be decided by a committee appointed by the Photographers' Association of America.

In conclusion, I wish to add that it has been my aim to make the competition one solely for honor, and with the mercenary motive so buried that it will require digging to discover. To accomplish this end I am willing to modify these rules to any extent, if made clear to me that the modification will assist in this purpose.

I cannot help feeling that photography is drifting deeper and deeper into the commercial channel so common to the present age, and which will, more than anything else I know of, help to make it a commercial business; this being so, the beautiful productions of which it is parent stand as nothing towards increasing their value as works of art. The appreciative public is now ready for a reaction. A few firm and earnest workers whose direct gain is not the motive would add much towards the cause.

Fraternally yours, T. H. BLAIR.

GELATINO-BROMIDE PAPER.

NOTICE.

OUR readers will doubtless have observed an advertisement of the Eastman Dry Plate and Film Company, inserted in the advertising columns of the BULLETIN, in which they offer for sale bromide paper which E. & H. T. Anthony & Co. claim to be an infringement of their U. S. Letters Patent (to T. C. Roche, dated February 8, 1881), and to enjoin the sale of which, and for the damages and profits arising out of past infringement, suit has been commenced against the Eastman Company in the U. S. Circuit Court. As our columns are open to the public, and as the Eastman Company have an annual contract with us for an advertising page, it will, of course, be understood that we do not in any manner authorize the sale of bromide paper by the Eastman Company, but, on the contrary, claim that every one who buys it is liable, with the makers, for damages and profits. The test suit which is being now prosecuted will definitely determine our rights to bromide paper, and meantime, and as we do not wish, in advance of the decision of this test case, to inflict any unnecessary annoyance upon the trade, we rely upon the good-will and good faith of dealers.

E. & H. T. Anthony & Co.

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

The Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A cash prize of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

W. H. WALMSLEY'S PRIZE.

W. H. Walmsley & Co., of Philadelphia, offer two prizes for competition at the Chicago Convention.

First Prize.—For the best portraiture, from cabinet to life-size, made with Beck's "Autograph" Lenses of any size, not smaller than No. 6, one "Autograph" Lens No. 7, of the cash value of $100.

Second Prize.—For the best work, other than portraiture, such as landscapes, architecture, interiors, etc., made with Beck's "Autograph" Lens of any size, one No. 5 "Autograph" Lens, of the cash value of $60.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING APRIL 26, 1887.

President DEXTER H. WALKER in the chair.

Mr. WALKER—*Ladies and Gentlemen and Members of the Association:* I now make my first appearance before you as your presiding officer by your kind suffrages and those of the Board of Direction, and I desire at this time to outline, in some degree, the policy which we will pursue, not differing materially from that of my predecessor, but at the same time trusting to improve upon it in some respects. We want to make some closer relation, if we possibly can, between the members of the society and the officers; to have some nearer tie than mere membership. We want to bring them into communion. We want to make them feel that the membership are dealing with all the questions and all the interests of the society.

Of course you know, as I do, that we are an incorporated body, and, as a result of that, we are obliged to have a Board of Direction and Officers to conduct the financial and other business affairs of the association. But at the same time we do not wish this to be understood in any sense as being exclusive in any other respect.

We feel, and I especially feel it incumbent upon myself to cultivate those relations.

The Board is made up of some of the old members, and some of the younger ones who have come into the society. There are none of them innovaters, and none of them desire to go beyond the original intention of the society, nor to do anything extraneous. They all seem to be, as far as their expressions to me are concerned, ardent and persistent in their desire to cultivate, as I say, these intimate relations.

I may say in this connection that in the past there has been some little criticism as to the business methods of the society. I have always disparaged this idea because I never liked it, and because I was sure the officers of the society always did what they thought best for its interests.

I speak thus plainly and pointedly because I want to urge upon you the necessity of giving us your hearty support, and giving it to us practically, not simply maintaining your membership in the society and paying your dues, but we want to have you co-operate actively with us.

Later on I will explain to you how we will endeavor to promote this particular desire on our part.

I might be expected at this time to make a prolonged address (being an incoming officer), but I will not now give you more than a mere summary of what we intend. We are not gathered to-night as a business body at all; this is an entertainment given by the members to their friends, and for that reason I must be very, very brief in what I have to say.

I have appointed certain committees which I shall name, and I expect from them their earnest co-operation. I expect that those committee-men will do their duty; and I expect them to work and not be mere figure-heads. I myself don't expect to be a figure-head, and I am going to labor in the right direction as well as my conscience will permit me to judge, and I am going to do my level best for this society as far as my limited capacities enable me to do. I will give you my earnest support in all your efforts for the best interests of the society, and that is the best you can expect of me.

(*To be continued.*)

Bibliography.

Wilson's Quarter Century in Photography. New York: Edward L. Wilson, 853 Broadway.

Dr. Wilson calls this a collection of hints on Practical Photography, which form a complete text book of the art. Judging from the mass of material crowded into 516 large pages, there seems to be little left to be desired by the practical photographer. Dr. Wilson's long experience in practical photographic manipulation and his personal contact with a large number of the best photographers in the country, has placed him in a position to write the thoroughly useful work before us. He has made a most judicious selection of material from the writings of over two hundred and fifty of the best workers in our art for the last quarter century. We have already given our readers a copy of the table of contents of this handsome volume, and can assure them that every topic is treated in the most comprehensive and practical manner. To give an idea of the thoroughness of the work, there are over thirty pages devoted to lenses; about thirty more to glass-house construction; forty to working under the sky-light, and the same number to art principles; while the whole volume is just packed with numbers of little hints and useful suggestions about apparatus, chemicals, and accessories.

Another thing to be remembered is that this treatise embraces the manipulations of the wet as well as the dry processes for making negatives, giving all the details in each case. There is also an admirable chapter on paper and film negatives; also a complete exposition of the various printing processes, and even orthochromatic photography is not forgotten. Altogether we must heartily commend this latest effort of the editor of the *Philadelphia Photographer*. The photographer that possesses this volume will have a friend he can never tire in seeking information.

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What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—J. S. M. writes: Will you kindly inform me of the process of copying drawings on sensitized ferro-prussiate paper for making blue and white pictures? I wish to get copies of a map and want to know how it is best to proceed. If the paper is only 30 inches wide (which is not wide enough for my purpose) can it be spliced?

A.—Full directions are given for the use of the paper in the packages in which it is sold. In the case of your map, it must be somewhat translucent, otherwise the light will not penetrate through to affect the ferro-prussiate paper placed beneath it. In the engineering establishments where this paper is used, the tracings from the drawings are used as negatives. A large sheet of plate glass is taken and underneath this is placed the tracing, ink side downward upon the sensitized paper; the heavy glass secures contact between the tracing and the paper and thus secures a sharp print. You can use two pieces of the paper if one is not large enough, and taking some central line, get prints of two halves of the map, each of which overlaps the other. When these halves are developed and dry, they can be cut to join upon another sheet of paper. If your map is not very translucent, you may yet succeed by exposing it over the sensitized paper as above for many hours to bright sunshine.

Q.—P. F. K. writes: Will the Bulletin please tell me if a printing bath can be kept in good working condition without boiling down; if so please state how and the quantity of neutralizer and with what to neutralize, etc.?

A.—A printing bath for keeping should have an acid reaction. If it gets colored and muddy, shake it up with some kaolin (China clay), using a piece the size of a walnut for each quart of bath. After settling clear it is carefully poured through a filter, and if acid is ready for use. Take care not to disturb the settlings when pouring on the filter or the filtration will be slow and may stop entirely.

Q.—H. M. writes: I shall be very thankful to you for an answer in Bulletin to the following question. How can I restore a faded photograph (best method) which has also turned yellow? By answering above you will greatly oblige me, as the photograph is a family relic.

A.—If the picture is a valuable one make a good negative of it first. Then soak it off the mount and place in a solution of mercuric chloride (corrosive sublimate) 10 grains to the ounce, for a few minutes. Wash well, and lay it on glass, carefully sponging it with a solution of sodium hyposulphite not stronger than three grains to the ounce. We are not sure that this will succeed, but it often will, and is the best method we know.

Q.—S. incloses a metallic-looking ferrotype and writes: Will you please inform me, through the BULLETIN, the cause of ferrotypes having a metallic appearance like the sample inclosed?

A.—The appearance which you have produced upon the ferrotype you send is caused by using too much acetic acid in the developer; try less, and if you don't succeed, let us hear from you again.

Q.—E. T. writes: Will you kindly answer the following questions through the next BULLETIN. Is it customary to charge the same for landscape photography, houses, animals, etc., as for portrait work of corresponding size? Are views of interiors usually made at the same price as common landscapes, or are they charged higher?

A.—Landscape photography is usually charged at a rate from one-third to twice as much as portrait work, depending upon the time and judgment needed in making the picture. Views of interiors cost twice to three times as much as portraits of the same size. There is a great deal of difference whether the subject comes to you under your conditions and favorable circumstances or you have to go to the subject and make the best of the conditions presented to you.

Views Caught with the Drop Shutter.

WE are glad to note the appearance among our exchanges of No. 17 of the *Photographic Beacon*, of Chicago. It is some time since we saw a copy of this journal, and we are glad it is still in existence.

C. W. MOTES, of Atlanta Ga., is truly a man of many medals, having captured fifteen from various fairs and associations where he has exhibited his work, including the Photographers' Association of America. We hope to see some of his handsome work at Chicago next month.

THE St. Louis Society of Amateur Photographers have given up their rooms in the Chamber of Commerce Building, and will hold no more meetings until further notice. A committee has charge of the property of the society and also the securing of new quarters.

VITTORIO TURATI, of Milan, Italy, sends us his handsome illustrated catalogue of work done by photo-mechanical printing at his establishment. This is one of the handsomest things of the kind we have ever seen, and shows wonderful skill in this interesting application of photography.

W. H. WALMSLEY & CO., of Philadelphia, send us the new (seventh) edition of their catalogue of photographic cameras, lenses, etc., which contains a description of the Beck lenses and the new Iris diaphragm, together with numerous pieces of apparatus from the factories of our publishers.

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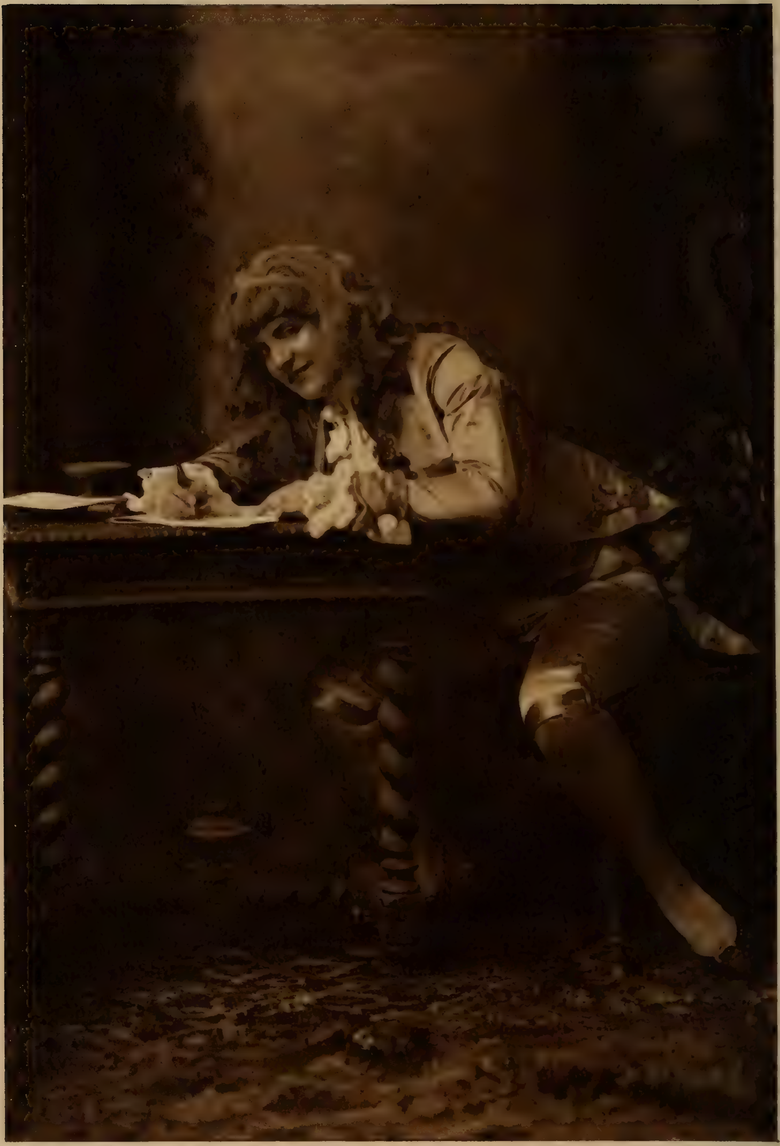

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IN "THE RECRUITING SARGEANT"

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JULY 23, 1887. Vol. XVIII.—No. 14.

ANOTHER WORD ABOUT DARK ROOM ILLUMINATION.

THE question of the lighting of the dark room has been discussed so much, that it would appear as if nothing was left to say upon the subject. Yet the kind and quality of the illumination is so important that every new fact, every development of the nature of light, is made available to secure a safe and, at the same time, convenient and adequate source of illumination, under which the extremely rapid plates of modern gelatino-bromide of silver may be manipulated. It is marvelous to see the extremely short periods of time in which some of our best brands of dry plates receive a photographic impression. Periods that are measured by a few hundredths of a second, motions so rapid that specially devised apparatus have to be used to measure their speed, are faithfully recorded on our modern instantaneous dry plates, and with an accuracy that is astonishing.

In using plates that are sensitive to such minute impressions of light, it is evident that the source of illumination in the dark room is of vital importance in order to secure clean sharp pictures free from fog. Again, these small periods of exposure require a correspondingly long period under the action of the developer, and consequently are submitted to the influence of the source of light longer than when more time is given to obtain the photographic impression. Such extended time of development must necessarily increase the danger of fogging the plate.

Some time ago, using one of the modern "lightning" brands of dry plates, we tried an experiment to see if the character, as well as the quality, of the dark room light did not have some influence upon the fogging of the plate. Taking a deep ruby lamp that under ordinary limited periods of development we were satisfied was safe, we exposed one of these lightning plates to its illumination at a distance of about eighteen inches for about ten minutes with the slide of the holder drawn half way out. Now, proceeding to develop it, we left the plate under the influence of the developer for about twenty minutes, rocking the developing dish frequently. As a result we obtained a well defined darkening of the exposed part of the plate, the dish being covered with an ordinary rubber dish during the progress of the development. That part of the plate where the slide of the holder had not been drawn showed no darkening. It was therefore evident that even this heavy ruby glass was not a complete protection when the plates are exposed to its influence

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for a considerable length of time. In this state we left the subject, with the resolve that in the case of prolonged development little light could be used in the dark room, and that the best plan was to keep the developing dish covered with an opaque dark screen. So the matter rested until we read the account of an extremely interesting lecture given at the Royal Institution, by Captain Abney, on "Sunlight Colors." During this lecture he undertook to answer the question why the sun is red at sunset, and he did so experimentally. Throwing a circular spot of light from the electric arc upon the white screen of the lecture room he produced an artificial sunset. This was done by placing in the path of the beam producing the spot of light a glass trough containing a solution of sodium thiosulphate (hyposulphite) to which was added a little hydrochloric acid. As the fine particles of sulphur separated, due to the decomposition of the fluid by the acid, and the liquid became turbid, the color of the spot of light changed, first to yellow, then to orange, and finally to deep red. The particles of sulphur had gradually obstructed the more refractive rays, and Captain Abney explained that in like manner the watery particles in the atmosphere interfere with the sunlight and give us red sunsets.

Now for the bearing of this upon dark room illumination. It appeared to us that if the direct rays from the lamp would fog the plates, by interposing some semi-transparent screen between the light and plate the same action would result as in Captain Abney's experiment. Any actinic light that escaped the ruby glass would be caught by the interference of the particles in the screen. Acting upon this idea, and surrounding the lamp with a piece of ruby fabric outside the ordinary red chimney, we exposed a plate twenty minutes to the light in the same manner as mentioned above, and developed in the same way. We found it impossible to detect any action after prolonged developing. Here then appears to be a method of treating the ruby light to secure freedom from fog in the rapid brands of plates: Use light that has been passed through a medium that diffuses it. There is another advantage about this diffused light, it is very much more agreeable to the eyes while developing. Those of our readers who are troubled with fogged plates should try this diffused red light, and in addition to its being safer than the direct rays from the ruby lamp, they will be agreeably surprised at its pleasant character in regard to the eyes.

EDITORIAL NOTES.

We are indebted to M. Carey Lea for a complete reprint of his admirable articles on "The Photo-chemistry of the Silver Haloids" recently published in the *American Journal of Science*. These papers are undoubtedly the most valuable contributions to photographic science made during the last quarter century. Would it not be a good idea for our photographic societies, either singly or collectively, to establish a fund to endow workers in this line of research. We feel sure that the results obtained would well repay the cost. There are few men able and willing to undertake such researches that can afford to give their time to the work for nothing, and in such cases a little financial assistance would work wonders. This is the scheme carried out in some of the European scientific societies, and these endowments have produced results of the highest importance. Let the Photographers' Association of America start the scheme at Chicago, and it will be a monument to the success of that meeting.

When Mr. W. K. Burton, of England, was passing through New York on his way to Japan, he paid a visit to the works of the Photo-gravure Company in Brooklyn, and in a recent issue of the *Photographic News* there appears an interesting account of what he saw. We shall not attempt to reproduce this account, as Mr. Edwards, the President of the Company, recently gave an interesting lecture upon the photo-gravure process, which has been reproduced in the columns of the Bulletin. But the following statistics we abstract for the benefit of our readers.

"The number of prints that can be taken from one gelatine plate on the hand-press varies widely with the printer, the negative, the subject, the paper, and the weather. With a good printer and a favorable subject, in cool weather 2,000 to 3,000 copies are not unusual. On the other hand some plates will only last for 50 copies. The average number does not exceed 250 copies. By machine printing the same conditions hold, but the number of copies is larger; 10,000 from a plate have been printed, but the average number is from 800 to 1,000. The average number of impressions a hand-press printer will make per day, taking small and large, does not exceed 150. By the machine, does not exceed 1,000. The number of photo-gravures (here we come into the region of certainties more nearly) that can be pulled from one plate without resteeling is 3,000; with resteeling from 8,000 to 10,000. The average number of impressions pulled per day, say of a subject about 9 x 7, on paper 11 x 14, is 200 to 300."

We hear that an attempt is to be made to break the rules in regard to advertising in the Art Hall at the Chicago Convention. These rules were laid down to secure a fair and honest exhibition of the art work of photography, and we most earnestly protest against any kind of advertising on the walls of the exhibition room. We cannot understand how it is that any one can object to placing all the pictures upon the same footing and let their merits alone tell. If there is any reason for publishing the kind of plates, paper, or lenses with which the pictures were made, this can be done in a regular advertisement in the journals after the Convention closes, and the rewards then obtained will be much more valuable from the fairness of the competition. But no matter who wants to make a change in the rules, we think they are excellent as they stand, and sincerely hope the Executive Committee will find no reason to change them. Let us have a fair exhibition and competition of photographic skill, or the Photographers' Association of America will die.

We call attention to the various notices and reports concerning the Convention found on other pages of the Bulletin. Our readers who contemplate a visit to Chicago should read them carefully, more especially the railroad notices and the Report of the Committee on Hotels. There is every reason to believe that a large gathering will be in Chicago, and a little trouble taken now to plan out the route to follow and where to locate will be well spent.

Professor E. C. Pickering and his Brother, W. H. Pickering, have recently gone to Colorado to locate an observatory for astronomical photography under a bequest from Uriah Boyden. The site for the observatory is not yet decided, but a position will be secured at a high altitude where a clear atmosphere can be found. The instruments taken by Mr. W. H. Pickering comprise a new telescope of 19-inch aperture, made by Clark, of Cambridge, with numerous appliances of new designs, mostly for photographic work, and self-recording barometers and thermometers. There is in process of manufacture a telescope of 13-inch and another of 10-inch dimensions, both being provided with photographic lenses. One of the nnique appliances of the expedition is in the 13-inch telescope. The result of numerous conferences between the users and the makers of the instrument is that a modified or reversible lens has been introduced, so that the same instrument can be used alternately for visual and for photographic purposes. This in itself may be reckoned a triumph already achieved, which in the record must go to the credit of this expedition.

The New Haven Camera Club recently had a delightful excursion to Middletown, on the Connecticut River, where the enthusiastic members caught many good pictures of the charming scenery of that region. About three o'clock the party returned on the steamer Sunshine. During a lovely sail of an hour and a half many instantaneous views were added to the collection, perhaps the most unique being what one passenger termed a "summer toboggan slide." A crowd of small boys, in the bathing costumes of Fijis, had flashed water on the steep and clayey banks, making them exceeding slippery. Seating themselves at the top they slid down with lightning speed and disappeared under the river surface with a tremendous splash. The party landed at New Haven at 7 P.M., after a very enjoyable day's outing.

We have just received from Dr. P. H. Dudley an 8 x 10 print made from a Stanley plate negative, which was taken from the rear of a train on the Panama Railroad traveling ten miles an hour. The subject is a small railroad depot with a number of colored people standing around, and the sharpness of the picture speaks wonderfully well for the plate, shutter and lens used, every object to the edges of the plate being clear and distinct.

RAMBLING.

Thermometer 100 Degrees in the Shade.

Dear Bulletin.

In your issue of July 9th, page 407, in an article by C. L. Bruns, U. S. N., on "The Proper Time for Exposure of Dry Plates," I notice that he has a most peculiar lens, or diaphragms for same. He says that "the amount of light that passes through the stops is directly proportional to their areas, hence the $\frac{1}{8}$-inch stop is four times faster than the $\frac{1}{4}$-inch, and sixteen times faster than the $\frac{1}{2}$-inch stop."

In my experience it is the reverse, and I think Mr. Bruns' article must have been incorrectly reported or copied. It is plain to any one that more light of same strength will pass through a large hole than a small one, and hence a $\frac{1}{4}$-inch diaphragm will admit more light than one of $\frac{1}{8}$-inch diameter. How much more I leave to scientists, but in practical work, were I exposing two plates, one with $\frac{1}{4}$-inch diapharagm and the other with $\frac{1}{8}$-inch, I should consider $2\frac{1}{2}$ to 3 seconds plenty for the latter, if I gave the former one second. I have been an amateur photographer for almost thirty years, and began printing on paper before albumen paper was hardly known, and I have never yet been able to lay down a rule for exposures. I do not pretend to make perfect pictures every time, but my failures are very few.

I have been amused at reading the discussions relating to the use of sensitized albumen paper in a photometer for the purpose of giving the strength of the light as a guide to exposing the plate. The scale of a sensitometer can be used for this, but the paper should always be exposed to the strong sunlight. This will give the comparative strength of the light, and enable one to judge more nearly of the proper exposure for interiors as compared with former experiences, but colors must be taken into consideration. A room in which the walls were tinted blue would require very much less time than one in which maroon, dark red, or brown prevailed. As the instrument for gauging the proper exposures for such has never been produced (and I doubt if it ever will), the larger part of the burden must be left to judgment which is the result of long practice.

I was one of a party who were on a photographic tour among the hills, and coming across a beautiful cascade in the woods, we proceeded to capture a counterfeit presentment of it. With a large diaphragm I considered one minute about the proper time, while a younger member (young in photography) said he would give five seconds. I told him to expose a plate 60 seconds and if it was over-timed I would give him a dozen plates. He made the exposure, and told me a few day subsequently that it gave him an excellent negative. As regards exposure and the latitude of same, I believe that there is not enough known to-day of what can be done with a dry plate to make any rules. How many years did we work at wet collodion photography and no one ever found it it all out? Theories were continually upset, and so it will be with gelatino-bromide plates.

I would say to one and all, Keep your eyes and ears open. If you hear or read of a new mode of working try it for yourself, and if unsuccessful, find out from the inventor wherein you erred and keep at it until you succeed. If you do not admire the *modus operandi* go back to your old one and stick to it until some one else gives a hint that appears reasonable. If a man says in his formula, "saturated soluion," use it, and do not try a "teaspoonful to the pint of water," as I have heard of being done, and then wonder why the plates will not develop. When any one has a new developer he desires to have others try, he should be willing to come before one of the societies and develop some plates with it in the presence of some of the members, and let them judge as to how they like its working. These in turn could show it to others, and the benefits, if any, would thus be enjoyed by all. If you have any dodge that eases labor do not keep it to yourself, but give it freely to all. If any one profits by it he will freely acknowledge it. If he does not, it will not hurt you. INQUIRER.

GHOSTS.

DEAR BULLETIN.

IN a former article I wrote you regarding the central spot in my lens. I began with small ghosts, and increased their size as I went on. I did so because my difficulties seemed to magnify the more I tried the lens. As they increased, so did my curiosity to find out wherein lay the trouble and to search for the remedy. I first thought it might be the fault of the front board, as a pin-hole would have had the same effect, but after several trials I became convinced that it was in the lens and tube, and nowhere else. I changed the position of the diaphragm by driving it forward, and, finding that this gave no relief, placed it nearer the lens. No matter where it was, I still found the ghostly presence in every negative.

Upon examining the lens it seemed perfect. I carefully cleaned it and returned to its cell. Upon fastening therein with the ring which screws into the tube and holds the lens firmly in place, I noticed that the inner side of this ring had become almost polished from repeated cleanings of the lens without removing it from the cell. I thinned some of Anthony's Flint Varnish with about two parts alcohol to one part of the varnish, and mixed enough lamp-black to give a dead finish when dry. I applied this to the inner side of the ring and on the front board, in fact everywhere I thought there would be the least possible chance of reflection, and tried the lens again. To my surprise and delight every negative came out as clean and free from any ghostly mark as could be wished for.

I mentioned the result of my experiments to a party who has been troubled in the same way, and upon applying my remedy he also found that it cured the evil. I also saw in Messrs. Anthony's a lens that had been returned by some one who claimed that it would not cover the plate. The reason was soon discovered, as the clerk seemed to know from experience where to look for the cause. It had been removed, either from curiosity as to its shape and appearance, or to dust it, and in replacing had been inverted, so that the plane side came nearest the plate.

The thought suggested itself to me, that you should mention in your instruction books, in speaking of or referring to a lens, as to what position it should occupy in the tube. It might save some tyro considerable trouble and prevent loss of plates, to say nothing of the views exposed on them which cannot be replaced. If all lenses were so made that they could not be wrongly placed in the tube, it would render such caution unnecessary; but at the price the cheaper grades are sold at, I presume any extra expense would be impossible. Could such be done it would prevent chipping the edge in removing and replacing the lens to clean it, and when dusty this must be done. The glasses seem to be very brittle, and great care should be used in handling them. INQUIRER.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued.*)

Retouching and Spotting Out.—Should there be necessity for retouching, spotting out or darkening certain places of the picture, it must be done before the second transfer is made, for it would show too much when done after that. Retouching is done in two ways; either by means of oil colors and brushes, or with the stump and finely ground lamp-black, carmine, *caput mortuum*, or graphite. If the retouching is done with dry colors it is best to flood the carbon picture with a solution made of 1 part glycerine in 25 parts water and allow it to dry. Plates prepared in this way take the dry colors very readily.

Second Transfer.—The so-called double transfer paper is also made by the carbon paper manufacturers, and it will be found convenient to buy it. However it may be prepared as follows: 10 ounces of gelatine are dissolved in 100 ounces of water; when liquefied from 1½ to 2 ounces of glycerine are added, and while this solution is still warm, 10 ounces of saturated solution of chrome alum are added, but this must be done drop by drop and with thorough stirring. If a very fine surface is wanted, a convenient quantity of sulphate of baryta may be added. The baryta is placed upon a grinding slab and is finely incorporated while adding the gelatine solution by degrees; the chrome alum solution is added last. The covering of the paper is done by floating on or drawing it over the warm solution. Fresh double transfer paper is soluble at about 95 degrees F.; older papers require a higher temperature, and often even boiling water will not have any effect on them; in such a case the paper is useless.

The second transfer manipulations can be conducted in full daylight. The transfer papers having been cut a little smaller in size than the glass plates, are placed, after having been dusted on both sides, in a tray containing clean cold water (of 60 to 70 degrees). The tray should be well filled, and the papers should remain from 5 to 10 minutes in the water, but an immersion of even two hours would not produce any bad effects. One of the plates with the dry carbon picture upon it is now carefully dusted and immersed for *just one second* in cold clean water, placed upon the table, picture upwards, and a piece of the double transfer paper is withdrawn from its tray and immersed in a tray containing hot water (from 95 to 150 degrees or more, according to the solubility of the paper) where it has to remain until the gelatinous covering of the paper becomes slimy. It is now placed with its gelatine side downwards upon the glass plate. Being in its right place, cover with the rubber cloth T, cloth side down, and apply the squeegee, using first gentle and afterwards more pressure, and striking always from the center to the borders.

N.B. (1.) Should water of 140 degrees F. not soften the gelatine of the double transfer paper, a small lump of carbonate of soda, or a few drops of liquor ammonia fortis may be added. If one or the other of these additions does not produce the softening of the gelatine, it will be proof that the paper has become insoluble, and fresh paper must be employed. (2.) If the water is too hot, or if the double transfer paper remains too long in it, it may happen that the gelatine will be liquefied, when it must not be used. If the water was not hot enough, or the paper had not remained a sufficient time in it, it happens that the transfer paper does not adhere well to the carbon print, and in drying there will appear many brilliant spots in the picture, principally where the high lights are, and around the outlines of the deep shadows. This same defect appears also if the plate has been immersed in warm or hot instead of cold water. If the cold water remains too long upon the carbon picture its final appearance often will be granular. (3.) If, in drying, the transfer paper peels off the plate without the carbon picture, this is generally from the picture remaining too long in the alum bath, or that the water in which the transfer paper has been soaked was too warm and dissolved the gelatine. (4.) If the paper, when dry, cannot be separated from the plate, or at some places sticks to it (principally in the lighter parts of the picture), it was caused by too hard rubbing the plate when polishing the waxing solution; or that the flannel used for this operation was not dry; or that the paper, when effecting the first transfer, had been left too long before developing.

Having affected the second transfer, the plates are placed upon the folding rack, where they have to remain until fully dry, which takes place in 3 to 6 hours, according to the temperature and dryness of the air. During dry weather care must be taken not to place the plates in a strong current of air, for the unavoidable consequence would be that the papers, either partially or *in toto*, would separate from the glasses, showing an uneven gloss. When fully dry, the papers are separated from the plates by inserting the blade of a pen-knife under one of the corners. It comes off with a brilliant gloss.

In order to preserve this high gloss, when mounting the pictures on Bristol board a special method as regards the paste or glue must be followed, for if the pictures were covered on their backs with paste or glue they would lose their gloss, and afterwards show only a brilliancy like albumen prints. The carbon pictures are trimmed to shape with large scissors; laid, with their carbon side downwards, upon a glass plate, and some strong and hot glue then applied only to the borders; they are placed in position upon the card-board, covered with a sheet of moderately stout paper, and pressed on by means of a paper-cutter, or weighted with a heavy glass plate, or some other pressure is employed. Care must be taken not to allow any glue to touch the carbon side, for it would take away the gloss from that part of the picture.

An easy way to preserve the gloss of a carbon picture is the following: Half an hour after having made the second transfer, paste upon the transfer another somewhat larger sheet of ordinary paper which had been previously damped. Turn over the borders to the back of the plate at two opposite sides and press them on. Upon this second sheet three or more others may be pasted, thus forming a card-board. The drying, of course, will take some hours longer, but the appearance of a carbon print mounted in this way is really pretty, and compensates for the trouble taken. When thoroughly dry, the picture may be separated from the plates, as indicated above, and trimmed to shape. Three or four pieces of double transfer paper may be used instead of the ordinary papers, but the second sheet should always be larger than the plate and doubled to the back and pasted on to it. This assures fast drying, and does not separate the paper from the plate before being thoroughly dry.

Double Transfer with Zinc Plates.—There is only a small difference between this and the former process. In place of glass or porcelain plates, zinc plates are employed, and the collodionizing may be dispensed with. The appearance of the picture depends upon the class of zinc plates used; *i.e.*, if finely polished plates are used, glossy pictures like albumen prints; if granulated plates, pictures without any gloss will result. The zinc plates should be well planed, free from any defects on one side, and of about $\frac{3}{16}$-inch thickness. New plates, or such as have not been in use for some time, are covered with a layer of oxide, which can only be removed with great trouble and which imparts a grayish color to the first few pictures developed upon them. For use they must either be treated in the same way as a glass or porcelain plates, or with the following solution:

Pure white or, preferably, yellow wax	1 part.
Rosin	1 "
Benzoline or spirits of turpentine	50 parts.

The plates after having been dusted are rubbed with a piece of soft linen or flannel dipped in the above solution. Some minutes are allowed for drying, and then they are polished in the same way as a glass plate. Only a gentle pressure must be employed whilst polishing. All the other operations as regards first transfer, developing, alum bath, and second transfer are identical with those of glass plates, only the retouching must be done after the second transfer.

Double Transfer with Flexible Supports.—The flexible supports are furnished by any dealer in carbon materials, but for those who would like to prepare them, the following information is given.

A smooth white paper of sufficient strength is immersed for from 5 to 10 minutes in a nearly saturated solution of unbleached shellac (which imparts to it a nice pink color), and is hung up to dry. The paper may also be treated with an aqueous solution of shellac prepared as follows:

Uubleached shellac	4 parts.
Powdered borax	1½ "
Boiled in water	35 "

Whilst this solution is still hot, the papers are immersed in it, one by one, for five minutes, then withdrawn and hung up to dry. If these papers are required to show a very smooth surface, they may be passed through the burnisher, which should not be too hot. Before use the flexible supports must be treated with the waxing solution, made as follows:

Pure wax	1 part.
Rosin	1 "
Benzoline (heated in a water or sand bath)	50 parts.

Or ½ part rosin and ½ part gum dammar may be substituted. The waxing is done in the same way as with zinc plates.

The flexible supports should always be a little larger than the carbon prints. Immerse the support, glossy side uppermost, in a tray containing abundant and pretty cold water. After about one minute they will flatten out. The carbon paper is also immersed in cold water, either in the same tray or a second one, freed from any air-bells, and brought into contact (under water) with the glossy side of the support; withdrawn from the tray, placed upon a glass plate or smooth board, and, applying the rubber-cloth and squeegee, pressed into intimate contact. Having withdrawn the rubber-cloth, the borders and back of the carbon paper are carefully wiped, and it is hung up to dry. Small sheets may be suspended by one wood clip, larger sheets require from two to three. After from 15 to 30 minutes the development may be made, proceeding in exactly the same way as already described. The developed picture must remain for about ten minutes in an alum bath of 2 per cent., and from there must be placed for about thirty minutes in clean cold water. Soaking a piece of double transfer paper in cold and hot water as described, it is placed upon the flexible support and squeegeed into intimate contact. Both the rubber-cloth and squeegee employed for the second transfer should always be used for this purpose only. Wipe the borders and back of the transfer paper and hang up to dry. When fully dry it may be separated in the usual way from the flexible support, which can be used repeatedly, all that is necessary being to free it from any adhering carbon or paper particles, rub with the waxing solution, and polish as indicated above. The polishing is best done with a soft linen towel. The mounting of such pictures must be done only when they are perfectly dry. They are trimmed by means of large paper scissors. The best way to mount them is to pass a brush charged with thick hot glue around the borders, and rub them on to the card-board. Paste or gum arabic may also be used, but care must be taken not to get any paste upon the picture side, the latter producing a less glossy appearance of the picture when dry.

Retouching Transferred Pictures.—Transferred prints, without the employment of collodion, can be retouched in the same way as albumen prints, the only precaution being to rub with a piece of linen dipped into benzoline or spirits of turpentine in order to free them from greasiness. Parts of the picture which would show too dark may be rubbed down with finely ground pumice-stone. High lights are produced by the scraper. The stump, charged with a mixture of equal parts of the finest lamp-black and carmine powder, may be used for the larger parts to darken them. The retouching of small spots may be done by taking a piece of carbon paper which has been dipped into hot water, and with a fine brush taking from the liquefied carbon as much as is wanted to block up the spot. In this case the retouching consists of the same material as the picture, but in order to render these spots stable, the brush must be dipped into a weak solution of chrome alum.

Burnishing and Varnishing.—Carbon pictures may be burnished in the same way as albumen prints. In employing a heated burnisher however, the pictures must be warmed before passing them through the rollers, for any trace of moisture would show itself in a rather ugly way. The varnishing is best done by using a saturated solution of wax in benzole; an alcohol varnish of medium strength or a ten per cent. solution of gum dammar in benzole may also be employed. Rubbing the pictures with cerat or ceroline imparts a nice gloss to them, preserving them effectually against any moisture.

Second Transfer of Pictures on Flexible Transfers to other Supports, as Alba or Wood Plates, Canvas, Card-board, Porcelain, etc.—The carbon picture, after having been dried upon the flexible transfer paper, may be retransferred to any plane surface, provided that it is covered with gelatine. Carbon pictures on alba plates or porcelain are of a really extraordinary beauty. The gelatine solution is prepared as follows: 20 ounces gelatine are dissolved in 400 ounces water, and just before use a solution of 1 ounce chrome alum, dissolved in 20 ounces water, is added to it drop by drop, always whilst stirring vigorously. This solution may be spread over the plate whilst still warm. A broad camel's hair brush may be used, passing it first lengthwise and afterwards crosswise over the plate. Having been so covered, and care having been used to avoid air-bells forming, the plates are allowed to dry. The transfer is effected as follows: The flexible support, as well as the gelatinized plate, are immersed in cold water and brought into contact; they are then withdrawn and the squeegee is applied with gentle pressure. When fully dry the flexible transfer is withdrawn, leaving the carbon print adhering to the plate or wood-board. For porcelain or opal plates, or mica, the proceeding is exactly the same. The transfer to card-board, or into a book or album, is made in the following way: The carbon print whilst still wet is floated upon a warm solution of 1 part gelatine in 5 parts water, and hung up to dry. Being quite dry it is again floated on a strong solution of white sugar in water and dried again. The place which the carbon picture is to occupy on the card-board or in the album is gelatinized by means of a brush and allowed to dry. The carbon picture is trimmed to the desired shape; the picture, as well as the gelatinized place, is moistened, and it is placed carefully into position, always avoiding any air-bells between the two. Light squeegeeing is applied and a light pressure is resorted to whilst drying. When fully dry, the flexible support peals off by itself. The transfer of carbon pictures upon wood plates for xylographic purposes, since an inverted image is wanted, may be done by simply effecting one transfer only and developing the picture when on the wood. The plate is covered with the above-mentioned gelatine solution and allowed to dry. The transfer is made exactly in the same manner as described under single transfer, and development may be made after five minutes. The picture is washed in cold water, no alum bath being used, and is allowed to dry slowly without heat.

(*To be continued.*)

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

THOMAS SUTTON, born 1819 at Kensington, died 1875 at Pwllheli, North Wales, took his B.A. degree at Caius College, Cambridge, in 1846, ranking as twenty-seventh wrangler. He commenced his work as a photographer in Jersey, in 1847. In 1856 Mr. Sutton began the publication of *Photographic Notes*, which he continued to edit until it was merged with the *Pictorial Photographer* in 1865. For a few months in 1861, Sutton held the post of Lecturer on Photography in King's College, London; but life in the great city was quite uncongenial to him, and he quickly resigned. In 1865 he removed to Redon, in Brittany, where he acted as Foreign Correspondent for the *British Journal of Photography*. He left that spot for North Wales only a few months before his death. Sutton was a keen and warm controversialist, entering into paper wars with much zest; but he did good work in photography, greatly improving the manufacture of collodion, and introducing a panoramic lens, improvements in carbon printing, etc.

1855. "The Calotype Process: a Hand-book to Photography on Paper." Post 8vo. 91 pp. Sold by J. Cundall, the Photographic Institution, 168 New Bond street. 2s. 6d.

Second edition, 1856. 93 pp. London. 2s. 6d.

In the preface we read that "prints from fine calotype negatives are scarcely distinguishable from those from glass negatives."

1856. "Practical Hints on Photography." T. Sutton, St. Brelade's, Jersey. With one specimen photograph, 1s. 6d.; with two, 2s.

1856. "Directions for Using Hollingworth's Thin Photographic Paper in the Positive and Negative Processes." Pamphlet. Small 8vo. 12 pp. Sutton & Blanquart Evrard, St. Brelade's, Jersey. 6d.

1857. "Treatise on the Positive Collodion Process." Post 8vo. Bland & Long, Opticians. 2s.

1858. "Dictionary of Terms used in Photography." Post 8vo. pp. vii. and 423. Illustrated. The Chemical Articles of A, B, C by John Worden. S. Low. 7s. 6d.

Second edition, 1867. By T. Sutton and George Dawson. 8vo. pp. iv. and 390. Illustrated. Low. 8s. 6d.

The authors "express thanks to an American gentleman, who desires to be anonymous, for some valuable hints and articles."

1862. "The Collodion Processes, Wet and Dry." Crown 8vo. 149 pp. S. Low, Ludgate Hill. 3s.

The preface states that "Though written for the tyro, this book contains two novelties, a rapid dry collodion process, and a new method of printing on albumenized paper, in which certain salts of lime are used in toning and fixing."

1863. "Photography in Printing Ink: being a description of the process recently patented by John Pouncy, of Dorchester." 8vo. 63 pp. S. Low & Son, Ludgate Hill. 1s.

1863. "A Treatise on Positive Printing." Crown 8vo. Lampray, Tibbits & Co., London. 1s. Second edition, 1864. Sampson Low.

1864. "A Description of Certain Instantaneous Dry Collodion Processes; and also of a New Set of Apparatus for Preparing Dry Plates." Pamphlet. Crown 8vo. Illustrated. 12mo. 92 pp. S. Low. 2s.

The process here described is an "Instantaneous Tannin Process" (evidently based on that of Major Russell), the new mode of development being alkaline instead of acid. The author states that he has sent to England a negative, one-half of which represents breaking waves, the other half a country lane far from the sea. He adds: "To all those who are desirous of taking up photography, either as an intellectual or artistic hobby, or for art purposes, I would say 'Now is the time' to do so. After twenty years of fag, mess, and failures, the good time has at length come when the art has been sufficiently perfected for your purposes." Perhaps Mr. Sutton was rather sanguine; at all events it was nearly another twenty years before our gelatine process arrived. We wonder where he would have found terms to sufficiently praise it!

1869. "Description of a New Instantaneous Wet Collodion Process; together with a Method of Preparing Rapid Dry Plates." 12mo. 47 pp. 3 wood-cuts. J. W. Green, 54 Paternoster row. 2s. 6d.

In preface (dated Redon, Ille et Vilaine, France, July, 1869) author remarks: "Novelty.—No free acid present in any of the operations, hence remarkable increase of sensitiveness; the collodion and bath are neutral, film and developer alkaline." It is also announced that "Materials are made specially for this work by W. Bailey & Son (chemists), Wolverhampton."

1873. "Practical Details of a New Wet Collodion Process." Crown 8vo. H. Greenwood, 2 York street. 1s.

Henry Fox-Talbot, the scion of a noble and wealthy family, was born at Lacock Abbey in Wiltshire, in February, 1800; he died in 1877. Graduating with the highest honors at Cambridge in 1821, Talbot sat in Parliament for two years, but retired in 1834 in order to devote himself to more congenial work. In 1833 he first began his endeavors to render permanent the images of the camera obscura, and in January, 1839, he publicly described his method of "photogenic drawing," and exhibited specimens in London. In 1841 he patented the "calotype" process. Pictures were obtained on paper coated with iodide of silver, and development was effected with a mixture of gallic acid and silver nitrate. Talbot also devised an instantaneous process (1851), and a process called photoglyphic engraving (1852), besides introducing many other improvements in photography. He also did good work in spectrum analysis, and in deciphering the cuneiform inscriptions of Egypt. He contributed fifty memoirs to various scientific periodicals between the years 1822 and 1872.

1844–46. "The Pencil of Nature." Issued in six parts, including twenty-four plates, with a history and account of the calotype process. Part I, 12s.; Part II, 21s.; Parts III to VI, price 7s. 6d. each. 4to. Longmans & Co.

This handsome work, with its bold type, wide margins, and red initial letters, was published by Talbot in order to make known the capabilities of his calotype process. The photographs measure, on an average, eight by six inches, and are evidently the work of a master. Unfortunately they are now all more or less faded, the fading having proceeded from the margin toward the center. The faded portions are of a yellow tinge, and still show all the lines of the original. They include views in Oxford, Paris, Orleans, etc.; cabinets of books, vases, glass, etc.; copies of engravings and manuscripts. In only one picture are figures introduced.

Alfred S. Taylor, Lecturer on Chemistry in Guy's Hospital.

1840. "On the Art of Photogenic Drawing." 8vo. 37 pp. Jeffery, 7 George yard, Lombard street. 2s.

"Photogenic Drawing" was the title originally applied by Fox Talbot to his process on paper. The author remarks: "The process of M. Daguerre is so complex, expensive, and requires so much practice, that even if it had not been patented it is not likely it would have ever come into general use." "The whole merit of the discovery is due to Talbot, but the facts here stated have been exclusively derived from very numerous experiments performed by myself during the last sixteen months." The "photogenic liquid" used is ammonio-nitrate of silver. Hyposulphite of soda is used for fixing.

Richard Wheeler Thomas, F.C.S., was a well-known chemist and dealer in photographic apparatus, having a shop in Pall Mall. He was perhaps the first to make photographic collodion for public sale.

1856. Enlarged Paper of Instructions for the use of "his preparation of Collodion: 'Xylo-Iodide of Silver.'" R. W. Thomas, Pall Mall. 1s. (Advertisement says: "Sent free for two stamps; or bound for thirteen stamps.")

1863. Pamphlet containing Five Papers on the Negative, etc. R. W. Thomas, Pall Mall. 1s. Revised edition, 1865.

1866. "The Modern Practice of Photography." Introductory Sketch and Five Chapters. 8vo. 67 pp. Harrison, Pall Mall. 1s.

New editions, 1868 and 1873. 8vo. 94 pp. 1s.; or bound, 2s.

The "Modern Practice" was a very popular text-book in its day. It was pactically an enlarged edition of the pamphlet issued in 1863. In the last edition the author states that thirty thousand copies of the book had been disposed of up to that date.

John Thomson, of the firm of Ross & Thomson (see Ross), Photographers, Edinburgh.

1855. "The Progress of Heliochromy; or, Printing in Colors by Light." Foolscap 8vo. Wood, Edinburgh; and H. Greenwood, Liverpool. 1s.

J. E. Thornton.

1886. "Table for Calculating Exposures. Revised and Adapted from Platt's Tables by special permission." Card and fly-sheet. J. E. Thornton, 3 New Lorne street, Moss Side, Manchester. In cloth, for pocket, 6d.; stiff cloth, 9d.

W. H. Thornthwaite, of the firm of Horne & Thornthwaite, Chemists and Dealers in Photographic Apparatus, etc.

1851. "A Guide to Photography: containing a Concise History of the Science and its Connection with Optics; together with simple and practical details for the production of Pictures by the Chemical Action of Light upon Prepared Surfaces of Paper, Glass, and Silvered Plates, including Photogenic Drawing, Talbotype or Calotype, Daguerreotype, and the Improved Process for Obtaining Views, Portraits, etc., with Prepared Collodion and Albumen. 71 pp. 47 wood-cuts. R. R. Pond, 17 Upper Wellington street, Strand.

Two or three editions appear to have been published annually, and sold by Horne & Thornthwaite, 123 Newgate street, and by the publishing firm of Simpkin, Marshall & Co. The last edition I have been able to trace is the seventeenth, published in 1860, 75 pp. and 43 wood-cuts.

This is the first book which mentions Archer's collodion process. The first edition says: "Mr. P. W. Fry was the first to practice with collodion," and "I cannot give better directions than those given by Mr. F. Horne to Mr. R. Hunt, and published in the *Art Journal* for July, 1851." Horne & Thornthwaite's catalogue is appended to the book, and gives a good idea of the prices which then prevailed.

(*To be continued.*)

THE ART OF MAKING PHOTO-GRAVURES.

By Ernest Edwards, *President of the Photo-gravure Company.*

(*Continued.*)

A good, thoroughly good, photographic negative is the first essential. It must be fully timed, of good density, crisp, reasonably (not unreasonably) sharp, and above all things, pictorial and well-composed both as regards lines as well as light and shade. Those negatives produce the best photo-gravures (or for that matter the best prints of any kind) which depend rather on a pleasing arrangement of light and shade, or composition, than on any special beauty of definition or sharpness. The negative should not be reversed, though it is possible to use a reversed negative, whilst the reproduction may be of the same size or reduced. It is possible to enlarge, but it is not desirable to do so. In the case of oil paintings, and in all cases where the original objects are in various colors, an orthochromatic negative should be used. I think that a reproduction of an oil painting made by means of an orthochromatic negative and a subsequent photo-gravure plate, represents the highest step yet reached in this branch of photographic progress. From the negative a positive on glass (a transparency) is made, either on collodion, on a gelatine dry plate, or on carbon. We use all these methods according to the subject and the quality of the original negative. Retouching may be effected on the transparency to any desired extent, and quite a good deal may be done even in the way of material alteration at this stage. From the transparency a picture is printed on a sheet of gelatine made sensitive to light with a bichromate. This final gelatine picture is attached to a polished sheet of copper, on which has been previously prepared an aquatint ground or grain. The gelatine picture having been washed in water to remove the unaltered bichromate so as to prevent the further action of light, is dried. The back of the copper plate is varnished with asphalt varnish to prevent the action of the etching fluid elsewhere than on the picture, and the plate is then placed in the etching bath. The etching bath used in our practice consists of a solution of perchloride of iron (ferric chloride) in water. The action of the bath commences first where the gelatine has not been affected by light. In those parts the gelatine is still soluble and absorbent of water, and, therefore, of the etching fluid, and the gelatine picture on the copper having been made from a positive, those parts where the etching is the strongest are the shadows or darks of the picture. On the other hand, the lights are protected from the action of the chloride, the gelatine covering them having been water-proofed by light, whilst the half-tones being partly water-proofed are partly protected. Thus the action of the chloride goes on in regular succession till all the gradations of the photograph are obtained, the aquatint grain under the gelatine, and the surface on the copper, all the time preserving and protecting the minute points necessary to give the plate its ink-holding capacity. Almost everything depends on the skill and judgment of the operator at this stage of the process. A mistake made now cannot be rectified subsequently, and a mistake now is very easily and very quickly made. When the etching is judged to be complete, the plate is washed thoroughly in water and the gelatine removed. It is now thoroughly cleaned and proved. The proof print decides whether the plate is good or bad. If good it is taken in hand by the finisher, who must always be an artist. A great deal may at this stage be done to the plate in the way of correction and alteration, and a very great deal may be done to assist in giving the plate the proper values of the original. When the finishing is adjudged to be complete another proof is made, and if necessary further work is put on the plate, and so on till it is finally approved. The finisher works with all the usual tools of the engraver, such as gravers, burnishers, roulettes, etc., but a special aptitude and skill is required in their use. However skilled a man may be as an etcher or engraver, he usually makes but a poor show when attempting to finish a photo-gravure plate. It is only an adept who knows how, to dare to alter the marvelous etching of the sun.

The plate having been finally approved as satisfactory, it is steel-faced. Without the modern device of steel-facing but very few impressions could be taken (probably not a dozen) before the delicate work of the plate would be injured. With steel-facing, from 10,000 to 20,000 impressions can be made from a plate without any apparent loss. Steel-facing is of French origin, and consists in depositing an infinitely thin layer of steel all over the surface of the plate, thick enough to preserve the copper from injury, but thin enough to retain the very finest gradations of the photograph. If, in the course of printing, the steel-facing shows any signs of wear, the coating is readily dissolved and replaced with a new facing of steel. After steel-facing the plate is ready for printing, and, on the skill with which this is done, a great deal depends. The best results are obtained by the skilled printer who is also an artist. In the case of more important works I should like to see that custom spread which gives on the prints the name of the printer; I mean the actual printer, not the boss. There is nothing particular to be said as to the process of printing. It is well known, and you will soon see the actual operation. But I would like to say a word as to the advantages of photo-gravure as a method of photo-mechanical printing. It is not a cheap process. It cannot be printed with type. But just as a steel or copper-plate print has qualities which are not possessed by a wood-cut, a photo-gravure has qualities, qualities which go without saying, not possessed by any method of typographic photo-engraving. What is known as the photo-gelatine process also produces results superior to the type method. But although photo-gelatine work has a quality of its own, and is in some respects unexcelled, photo-gravure in other respects has advantages over it. A photo-gravure can be improved and altered as much as may be desired after the plate is made till just the result needed is obtained, and when obtained the printing ceases to be a source of anxiety, as the edition printed should always be uniform. The plate is good for subsequent editions, which are exactly like the first, whenever desired, and they are made without the further action of light. There is a strength and robustness, and the blacks are more nearly velvet in a good photo-gravure plate than in any other photographic method. And there is room for far greater development in photo-gravure than in any other photographic method. I cannot forbear in this connection from adverting to an unfortunate tendency that exists among some manufacturers and some publishers to call photo-gelatine work by the name of photo-gravure. What is the sense of this? Nothing in the world can beat the special qualities of gelatine printing—qualities which photo-gravures do not possess. And nothing in the world can beat the special qualities of photo-gravures, qualities which photo-gelatine prints do not possess. To my mind it is as much an outrage on photo-gelatine as on photo-gravure work to reverse the names. Yet the tendency is to do just this thing; a serious mistake that will become, if not checked, a serious misfortune. Would there be any sense in calling a lithograph a steel engraving? It would be just about the same as calling a photo-gelatine print a photo-gravure, and, though the result might benefit the producer for the moment, it would be otherwise when the deception was discovered.

In going through all the ancient, yet modern, history of the development of photo-gravure, one can but ask that old, old question, "What is there new under the sun?"

With the story before us of Fox Talbot's process and the process of Pretch; of Woodbury's process and of aquatint engraving; of steel-facing and all the other tricks and turns, what is there new in what we are doing to-day? Nothing, absolutely nothing. These men played the same play that we are playing, knew the words and the cues just as well as we do, only in one respect, one grand respect, is the situation changed. They played to empty benches, we have an audience (largely in this vast New World), an audience ready to applaud and to support all those results and efforts which tend to raise photography into art.

ON RED AND PURPLE CHLORIDE, BROMIDE, AND IODIDE OF SILVER—ON HELIOCHROMY, AND ON THE LATENT PHOTOGRAPHIC IMAGE.

BY M. CAREY LEA, PHILADELPHIA.

(*Continued.*)

Photochloride by Action of Potash with Oxidizable Organic Substances.

There is no better method of obtaining photochloride than by acting on a salt of silver with potash and certain organic substances. Milk sugar, dextrine, and aldehyde give particularly good results. Milk sugar acts rapidly, dextrine slowly. Other substances with which, combined with potash, I have obtained chloride, are gum, tannin, gallotannic acid, manna, glycerine, alcohol, carbolic acid, etc. The number might doubtless be indefinitely multiplied. After the action has reached a proper stage (which with milk sugar is apt to be less than a minute, and with dextrine may take half an hour) HCl is added, whereupon the precipitate changes in appearance, but does not exhibit its characteristic color until after boiling with nitric acid. The best result is obtained when the precipitate, after addition of HCl, has a rich chestnut-brown shade,* which by nitric acid changes to shades of purple and burnt carmine when milk sugar, dextrine, or aldehyde has been the reducing agent. When the salt of silver employed has been the chloride, of course treatment with HCl is superfluous.

A specimen obtained by acting on silver nitrate with potash and dextrine was found to contain 2.26 per cent. of subchloride; another, obtained with silver nitrate, potash and milk sugar, contained only 0.34 per cent. As in former instances, these determinations are useful only in indicating the extreme variability of these substances, and their approximate limits of composition.

Other Reactions Leading to the Formation of Photochloride.

A few more instances are here added, indicating the variety of ways in which this product may be obtained.

The following is an interesting reaction. If a solution of ferrous sulphate is made strongly acid with HCl, and solution of silver nitrate added, the silver is thrown down as white chloride; but if to the silver solution is first added a little ammonia, enough to redissolve the oxide, but much less than enough to neutralize the acid added to the iron solution, then, on pouring the silver solution into the iron, the silver falls as red chloride. So obtained it has at first a dull purple shade, but by purification, as before described, a good product is obtained. This method, however, scarcely tends to the production of the splendid copper-red shades of color that are got by acting on silver chloride dissolved in ammonia with ferrous sulphate, and then adding dilute sulphuric acid. The shade of color shown by any particular specimen is always of interest, because, as before mentioned, it modifies the effect exerted upon it by the spectrum.

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* A specimen in this stage, and before treatment with nitric acid, was found to contain 92.68 per cent. of silver, showing it to be a mixture of metallic silver with chloride and subchloride.

Potassio-ferrous Oxalate.—This now well-known oxalate developer, which I described some years ago, throws down from silver nitrate a black powder; this precipitate treated with HCl scarcely alters in appearance, but washed and boiled with dilute nitric acid, changes to a deep purple.

Pyrogallol is capable of leading to the formation of photochloride. When ammoniacal solution of silver nitrate is poured into solution of pyrogallol in water made strongly acid with HCl, in such proportion that the mixed solutions remain strongly acid, there falls a grayish product, which, by washing and treatment with hot dilute nitric acid, becomes bright pink.

Ferrous oxide differs essentially in its action on silver solutions from ferrous sulphate. A silver nitrate solution added to one of ferrous sulphate precipitates gray metallic silver. But if potash or soda is first added to the ferrous solution, and then silver nitrate, followed by HCl, the red chloride is formed abundantly. This reaction is similar to that already described, in which an ammoniacal solution of silver is added to one of ferrous sulphate.

To the same class of reaction, belong the following. Silver carbonate with excess of sodium carbonate is thrown into solution of ferric sulphate, and after standing a few minutes HCl in excess is added. The silver is converted into red chloride.

It seemed possible that silver itself might be made the means of reducing its chloride. The experiment was made in this way. Freshly precipitated and still moist chloride was intimately mixed with metallic silver in fine powder and a little water. This was heated till the water boiled, and nitric acid was added. After the action was over, the chloride had assumed a deep pink color. A similar result is obtained without the aid of heat, but the resulting color is much paler.

Analogous to this is the following. When a cake of fused silver chloride in a crucible is reduced with dilute sulphuric acid and zinc, if the reaction is interrupted when not quite finished, and the metallic silver is dissolved out with hot nitric acid, the residue of silver chloride will be found to be pink.

When HCl is brought into contact with Ag, together with an oxidizing agent, such as a bichromate or permanganate, it gives rise to formation of colored chloride. These I have not specially examined, but there can be little doubt that they are identical in nature with the foregoing. So, too, when silver in contact with mixed potassium chloride and chlorate is cautiously treated with dilute sulphuric acid.

The reactions above described will serve to show under what a vast variety of conditions the photosalts are formed. Most of the methods here described represent each a whole class of reactions all resulting in the same general way, and these classes might doubtless be largely added to. Almost any silver solution brought into contact with almost any reducing agent, and then treated with HCl, gives rise to the formation of photochloride. Almost any chlorinizing influence brought to bear on metallic silver has the same result; or when silver is brought into contact with almost any oxidizing agent and HCl. It may be said without exaggeration that the number of reactions that lead to the formation of photochloride is much larger than those leading to production of normal chloride.

REACTIONS OF PHOTOCHLORIDE.

Exposed to ordinary diffused light, all the bright shades of silver photochloride quickly change to purple and purple-black. The darker shades are more slowly influenced.

Mercuric chloride gradually changes it to a dirty white.

Mercuric nitrate dissolves it easily and completely, but apparently with decomposition, as it can only be recovered as white chloride. Potassic chloride seems to be without effect.

Potassic bromide soon converts it to a dull lilac, which at the end of twelve hours showed no further change.

In contact with potassic iodide, the color instantly changes to blue-gray. This change is produced by a quantity of iodide, too small to dissolve even a trace of silver. The filtrate is not darkened by ammonium sulphide. With a larger quantity silver is dissolved abundantly. By acting with renewed iodine solution, the substance continually darkens and diminishes until only a few black points, barely visible, are left.

Treated with dilute solution of potassium chlorate and HCl, the red substance gradually passes to pink, to flesh color, and finally to pure white.

The action of heat on the photochloride is very curious; its tendency is generally towards redness. Specimens appearing quite black are rendered distinctly purple or chocolate by heating to 212 degrees F. in a drying oven. Often, when the substance first separates by addition of HCl, it is pure gray. This gray will often be changed to pink by simply heating to 212 degrees. (This happens when a gray form is produced; if the grayness is due to admixed metallic silver, it is only removed by boiling with nitric acid.)

The somewhat surprising change of color which is often seen when the crude substance is boiled with nitric acid (sometime from dull dark gray to crimson) is due to three concurrent actions, that of the mere heat, the removal of the silver, and the breaking up of uncombined subchloride.

It is not possible to dissolve out the normal chloride by a solvent like ammonium chloride from the photochlorides, leaving the subchloride behind. When red chloride is boiled with successive portions of strong solution of ammonium chloride in large excess, the material gradually diminishes until, if the operation is continued long enough, there remains a small residue of a warm gray color, which consists of metallic silver, and dissolves without residue in nitric acid.

If sodic chloride is substituted for ammonium chloride, the same result follows, except that the operation is greatly more tedious. If persevered in until the hot solution no longer removes traces of silver chloride, the residue consists of nothing but metallic silver.

Action of Light on Normal Silver Chloride.

When silver chloride, precipitated with excess of HCl, is exposed to light, it becomes with time very dark. Cold, strong nitric acid, 1.36 sp. gr., extracts a trace only of silver.

The principal action of light on AgCl (precipitated in presence of excess of HCl) consists in the formation of a small quantity of subchloride, which enters into combination with the white chloride not acted upon, forming the photochloride, and thus is able to withstand the action of strong nitric acid. At the same time a trace is formed, either of metallic silver, or of uncombined subchloride; it is impossible to say which. After a certain very moderate quantity of subchloride is formed, the action of light seems to cease. This cessation has been noted by many observers, perhaps most exactly by Professor Spencer Newbury.

The nature of the product formed by the continued action of light on silver chloride seems to support the conclusion that the subchloride is combined with the whole of the normal chloride after the manner of lakes rather than in equivalent proportions. If the latter were the case, it seems probable that the continued action of light would extend to much greater decomposition than it is found to do.

The action of light in the formation of the so-called latent image will be examined in the second part of this paper.

Photobromide and Photoiodide.

It has been already mentioned that bromine and iodine form with silver, combinations in all respects analogous to those of chlorine. They are less stable than it, and consequently the number of reactions that lead to their production is somewhat more limited. Each, however, is formed in a great variety of ways, and with the same ease as the chloride. In color they are for the most part indistinguishable from it, but exhibit different reactions.

RELATIONS OF PHOTOCHLORIDE TO HELIOCHROMY.

The photochloride was examined both with the spectrum and under colored glass.

The rose-colored form of photochloride was that which gave the best effect. In the violet of the spectrum it assumed a pure violet color; in the blue it acquired a slate-blue; in green and yellow a bleaching influence was shown; in the red it remained unchanged. The maximum effect was about the line F, with another maximum at the end of the visible violet less marked than the one at F.

Under colored glass the colors obtained were brighter; under two thicknesses of dark ruby glass the red became brighter and richer. Under blue glass some specimens gave a fair blue, others merely gray. Under cobalt a deep blue was easily obtained, and under manganese violet a fine violet, very distinct in shade from the cobalt. Green produced but little effect; yellow was sometimes faintly reproduced, but rarely. But the yellow glass of commerce, even the dark yellow, lets through portions of nearly the whole spectrum, as can readily be seen by testing it with the spectroscope.

The dark purple forms of chloride do not give as good results as the rose and coppery shades. These last have many points of resemblance with the material of Becquerel's films, resemblance of color, probably of composition, as far as we can judge of the constitution of those films from their origin. They were far too attenuated to admit of analysis, and resemblance in the curious way in which their color is affected by heat, so that the conclusion seems inevitable that they are at least closely related.

There is certainly here a great and most interesting field for experiment. Hardly any two specimens of photochloride give exactly the same results with colored light, and this suggests great possibilities. There is the very great advantage in this method over any previous, that the material is easily obtained in any desired quantity, and in a condition most favorable for experiment.

The action of light on photochloride can be a good deal affected by placing other sustances in contact with it. Any substance capable of giving up chlorine seems to influence the action somewhat; ferric chloride often acts favorably, also stannic and cupric chlorides.

Evidently an important point in all heliochromic processes is, that as white light must be represented by white in the image, it is an essential condition that white light must exert a bleaching action on the sensitive substance employed. Red chloride does not bleach, but darkens in white light; but the property of bleaching, to a very considerable extent, may be conferred on it by certain other chlorides, and particularly by lead chloride and zinc chloride.

This I look upon as very important.

Another matter of interest is exaltation of sensitiveness, and this I find is accomplished in quite a remarkable way by sodium salicylate, the presence of which at least trebles the action of light on these substances, and probably on others.

I am persuaded that in the reactions which have been here described lies the future of heliochromy, and that in some form or other this beautiful red chloride is destined to lead eventually to the reproduction of natural colors.

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SOME PHOTOGRAPHIC HERESIES.

BY CHARLES TRUSCOTT.

(*Continued.*)

I WAS out with my camera a few days ago, and a gentleman came by and asked, pointing to the camera, "What sort of pictures does that make. Clear?" I must confess he did not make himself clear to me, so I answered, "That is for making photographs." He said, "But does it make them clear?" I replied, "That depends on how it is used; it is a question of skill, not tools; one man will carve better with a pen-knife than another will with the finest set of carving tools."

While I possess the most complete outfit probably in this city, and set a high value on it, I should be foolish to expect my work to be good simply because I possess good tools.

Let us take a comprehensive view of this subject, and see how it looks from a distance in a good light. The universe, and all contained therein, visible and invisible, has to be photographed. Who is to do it? We professionals cannot begin to do it; it is much too large a contract. Then what are we to do? Are we to be like dogs in the manger, or cheerfully recognize the valuable service our amateur brethren are rendering in this work? How much, do you think, of the work done by amateurs would come to the profession? Less than one-tenth; that is to say, more than nine-tenths of the work done by amateurs would never be done if they did not do it. Then let us not forget the splendid services amateurs have rendered the art science in the past. Surely they have earned their diploma. Then away with petty jealousies, and such old cries as "The craft is in danger!" If the craft is in danger, it is from within, and not from without; and it will generally be found that the most jealous are the incompetent, those who have no special skill to rely on.

There is a general superstition in the profession that a north light is a necessity for a portrait studio. In fact I very much doubt if there is a south sky-light in this city. See the trouble they have gone to all down Arch and Chestnut streets to obtain a north light; they have had to either build over two houses or spoil the length of the studio. Now I have worked under many sky-lights, and prefer a south light every time.

Speaking of portraiture, a portrait combination lens is supposed to give great roundness of image; of course opticians favor this view, as well as many photographers. My opinion is, it is a question of lighting, and has little or nothing to do with the lenses.

Mr. Burton has lately been finding fault with the term "depth of focus," but he does not suggest a better. He says it is impossible that more than one plane can be perfectly defined at once by any lens, no matter how small the diaphragm used. Truly we are getting things down very fine. Why did he not go further, and object to the term "flatness of field," because no lens has a perfectly flat field? Why did he use the term "perfect definition," when he knew that the correction of all photographic lenses is a compromise, and that the photographic lens has not yet been made perfectly free from astigmatism? Consequently there is no such thing as perfect definition. I notice some writers on photographic optics have lately been using the term "penetration;" but is it any improvement on "depth of focus?" I think not; besides it is not nearly so expressive. The English language is a very good one, but, like many other things, is not quite perfect.

Another heresy of mine is that every live photographic society should have a standing committee, which may be called the "Research Committee," composed of three experts, who should, if possible, be, either individually or collectively, skilled in photographic chemistry, photographic optics, and mechanics, with power to add to their number for special work. They should report at each monthly meeting on such matters as might have been referred to them, or in their judgment they may deem worthy of investigation. One part of the order of business should be "Report of Research Committee." A question may be asked which no one is able to answer, such as "Is chloride of sodium a restrainer or an accelerator?" Referred to the Research Committee. An optician brings out a new lens or a new invention, or a plate maker a new plate, for which they claim possible or impossible qualities. Knowing a society has a competent Research Committee, samples are forwarded for examination, and the reports of such committee would be of great value to the members and the photographic world.

I have heard it stated on good authority that a diaphragm which expands and contracts during exposure would not give good definition with a single lens, but having tried, it I can say it is a mistake, for it does not injure the definition in the least, but improves it.

Mr. J. Traill Taylor, in a lecture on lenses lately, proposed as a corrector for single lenses a pair of common, cheap lenses, to be placed near the diaphragm; one a periscopic, of short focus, and the other a concave lens, of the same focus. I have tried it, and having no focus, it has no effect, as we might expect. This gentleman is usually so very accurate, especially in optical matters, that I am the more surprised he should make such a suggestion without having first tested it.

I was speaking of this to a gentleman whom you all know, and he said, "Have you seen my plan of doing that?" I answered, "No; what is it?" He said, "You are aware that a square diaphragm gives cushioned-shaped distortion." I replied, "I did not; but I did know that placing the diaphragm behind the lens gave that form of distortion." "Well," he said, "a square diaphragm gives it, too; now I make a round diaphragm, and outline a square outside of it, and in each corner of the square I cut out a triangular aperture, which will give a rectilinear picture." I tried the square diaphragm, and found it did not give the cushion distortion as stated, so did not think the other was worth trying, as the distortion is not influenced by the shape of the diaphragm, but by its position. I think the single lens has a great future before it, however some may despise it.

One article of my photographic creed is, I believe in the capabilities of a plate of the most exalted sensitiveness, the largest diaphragm, and the shortest exposure that will give the amount of detail and definition desired.

[*From Art Amateur.*]

PORTRAIT LIGHTING.

BY GEORGE G. ROCKWOOD.

A GENERAL suggestion in these columns some time since, to the effect that a sitter should be placed in about the same light as a piece of sculpture, and illuminated in about the same manner, has brought me inquiries for "further particulars," and some portraits taken in the manner suggested. These latter have excellent qualities, but show a lack of consideration, in most instances, of the circumstances which have been, so to speak, created and yet ignored! As a matter of course, if there are no reflectors, and the shadows are absolutely black, good results must be made at the expense of time. While I maintain the correctness of the general theory, I have in many instances found it necessary to modify the methods employed. For the last few months I have pursued a series of experiments directly in this line. Acting on the theory stated, that a sculpturesque light was to be desired, I removed all side reflectors and concentrated the lights to a greater degree than ever before. Some of my results were very satisfactory, but in many instances they involved long exposures. I also found that photographic portraiture under such circumstances was justice without mercy! With the middle-aged and old the effect was strongly to exaggerate the lines and shadows, and never to favor the sitter. Artistically, the effects were superb; as portraits, the results were not such as would please the average sitter. I soon satisfied myself of this by making two negatives of each sitter, one as above described, and one in more diffused light and the shadows softened by a side screen. The result was almost always the same, the sitter chose the latter. I therefore work now to get all the effect possible by direct light modified by means of a head screen, with the shadows rendered transparent by a reflector. I produce the strongest effect first; then modify as already explained. I have said nothing of backgrounds, having discussed them in previous numbers of the magazine. Of course the contrasts and general effects can only be secured by a careful consideration both of the distance and the tone of the background. It is almost needless to say that the latter should always be in contrast with the lights and shadows of the image; in a word, darker than the highest light, and lighter than the deepest shadow of the head. With the background screen already described, hung in the center and capable of tipping forward or backward, almost any tone can be obtained.

Head Screens.—Some amateur portraiture has been exhibited lately which comes near to the highest standard, the principal fault being flat lights to the pictures, which yet apparently are full-timed. These pictures are mostly taken by a side light from ordinary windows, and, of course, hard to manage. If a piece of thin Swiss muslin or some similar fabric be stretched over the upper sash the light will be softened, and much more form and modeling will be preserved. The exposure need not be much prolonged.

Portrait Sizes.—"Dilemma" asks why a bromide enlargement which he sends, "looks so small," giving the impression that the original of the portrait is a dwarf? The reason is that the head is too large. I have the impression that any portrait smaller than life size and larger than half-life size will give the impression of a diminutive subject; so I never make a head larger than half-life size, say five inches, unless I make it full life size, nine or ten inches. Any departure from this will, in adult portraiture, give the result complained of above. A curious instance of this was seen in the National Academy a few years ago. Evidently there was a scarcity of wall-space in the house where the picture was to be hung, for a group of adults were not only crowded into the canvas, but the heads were all about an inch or more under life size. The result was that a company of distinguished gentlemen looked like dwarfs.

OUR ILLUSTRATION.

THE fine photo-gravure which we give as an illustration with this issue of the BULLETIN is one of the best pieces of work of the kind that we have ever seen. The subject, the artist work by Sarony, the beautiful effect of the photo-gravure, the delicate mounting, all go to make up a truly artistic combination which it is not often we can present to our readers..

COPIES OF CONVENTION PICTURES.

To the Editors of the BULLETIN.

I HAVE a suggestion to make with reference to our coming Convention. We smaller photographers must receive a great deal of benefit from studying the examples of work by the greater ones, and I for my part (and I know that others are of the same mind) would be very glad to be able to purchase copies of the pictures we see at our annual conventions, and I make this suggestion that it be published in some way, that the Secretary will receive orders (and the pay also, mind you) for any duplicates that may be desired.

I know the duties of the Secretary are onerous enough already, but this seems to me the best way to do it. One can leave his order and address with him, accompanied by the cash, and receive his prints by mail at the convenience of the artist. I know that the last time I attended the Convention (at Buffalo), my note book was not sufficient to secure all the excellent qualities that I wished to remember in the specimens of fine photography displayed there.

I hope that you may in some way use your influence to bring about some such arrangement. SMILEY.

LOWELL, MASS., July, 1887.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

FOREIGN PICTURES FOR CHICAGO.

We are advised by our correspondents in Europe that quite a number of German exhibits of pictures are *en route* for New York, and will reach here in a few days. Among those mentioned as sending pictures we note Hanfstängel, Teich, and Schmidt, of Frankfort. There is also a very large picture of the Forum Romanum at Rome, made by Mr. Anderson, of Rome, which has created quite a sensation in Europe. We also have a cablegram from Schultz and Suck, of Karlsruhe, calling for space for their pictures.

CHICAGO CONVENTION, P. A. OF A.

Rules Concerning Exhibits and Competition for Prizes.

The rules adopted for the exhibit of photographs in the Art Hall and competition for association and private prizes have been modified to stand as follows:

All exhibits competing for association prizes must be without frames or glass. Pictures may be fastened to boards covered with cloth or paper, and a neat molding, not exceeding one inch in width, may be put around the edge of board to give a finish.

No signs of any description shall be allowed to be placed in the halls devoted to the display of photographs, except one card to every exhibit; said card not to exceed 7 x 12 inches in size, and to contain only name and address of photographer whose work it represents.

This shall not prevent the use of card mounts with the photographer's address, and any picture may have its title or subject neatly inscribed thereon, but nothing of an advertising nature will be permitted.

No pictures will be allowed in the Art Hall that have any marks indicating what plates, lenses, paper, etc., were used.

Exhibits conflicting with this rule may be displayed in the stock dealers' department, to which the above rules do not apply.

The Executive Committee.

REPORT OF HOTEL COMMITTEE, P. A. OF A. CONVENTION.

The Palmer House will give a rate of $2.50 *per capita* per day when more than one person occupies a room. For one person in a room from $3 per day. Rooms on the European plan. When two or more occupy same room, a rebate of 25 cents *per capita.*

The Clifton House will give a rate of $2.50 per day.

The Grand Pacific Hotel, regular rates from $3.50 per day, will take off 50 cents per day.

The Leland Hotel.—Rates from $3 per day.

The Sherman House.—When two in one room, $2.50 each per day.

The Tremont House.—Rates from $3 to $5 per day, with a discount of 50 cents on all rooms.

Photographers on registering their names at these hotels must take care to inform the clerks that they require the Convention rate.

The Commercial Hotel.—When a room is occupied by two persons, a rate of $1.75 per day will be made. Single room from $2.

The Gault House, $2 per day.

On the European Plan.

The St. Charles, 15 and 17 South Clark street, is the cheapest we put on the list. Rooms can be had here from 50 cents per day.

The Brevoort from 75 cents per day.

The Windsor from 80 cents per day.

McCoy's European Hotel.—When two occupy one bed, 75 cents each. Single room for one person, $1.

There are a number of cheap hotels in Chicago; we do not think it necessary to name them, because any one wishing to be economical can take a room on the European plan from 50 cents per day, and in some restaurants get meals from 15 cents and upward. At Kinsley's, which is equal to Delmonico's, you can spend anything you like.

C. Gentilé.

SPECIAL RATES FROM PHILADELPHIA TO THE CHICAGO CONVENTION.

We have at last completed arrangements with the old reliable Baltimore and Ohio Railroad Company for excursion rates to Chicago for parties desiring to attend the P. A. of A. Convention.

Round trip from Philadelphia only, $22.75 on the limited express. Trains leave as follows: 7 A.M., arriving in Chicago at 9.30 next morning; 5 P.M., arriving in Chicago at 5.40 second morning.

This is a beautiful route, taking in Baltimore, Washington, Harper's Ferry, Deer Park, etc.

If photographers desire to stop over at any particular point *en route*, advise us, and we will see that they are accommodated.

Dining car on the train. Orders for these special tickets may be had by applying to

Buchanan, Bromley & Co.,
1030 Arch street, Philadelphia.

EXCURSION FROM PITTSBURGH TO THE CHICAGO CONVENTION.

We take pleasure in informing our friends, the photographic fraternity, that we have completed all arrangements with the most direct and thoroughly equipped railroad to transport such of our friends who may desire to attend above Convention at the wonderfully reduced rate of $10.50 for the round trip.

Should you or friends desire to avail yourselves of this opportunity, a prompt reply is solicited. Upon receipt of the amount, one or more tickets will be sent to any address desired. Tickets will be placed on sale at our office, 242 Fifth avenue, August 1st. Same are limited from the 5th to 15th of August. Should you desire Pullman accommodation you will please advise in time, as diagram for same will be open on the 1st of August. Excursion train to leave for Convention on the 8th of August noon.

Yours respectfully,

Pittsburgh, July 11th, 1887.

R. Broude & Co.

P. S.—Furthermore should you be offered an inducement on this rate, we guarantee to meet the same.

B. & O. RAILROAD RATE TO CHICAGO FROM NEW YORK.

The Baltimore and Ohio Railroad offer special reduced fares to delegates attending the Photographers' Convention at Chicago, August 9th, of $17 going, and returning at $6.67, or a total for the round trip of $23.67. This route passes through Philadelphia, Baltimore, Washington, Harper's Ferry (the place where

Lee's army crossed the Potomac River), Alleghany Mountains, Deer Park, Oakland, and the most picturesque part of the country.

Tickets, sleeping car accommodations, time tables, and any other information can be obtained at the Company's office, 415 Broadway, New York.

C. P. Craig,
General Eastern Passenger Agent.

STANLEY'S ONE HUNDRED DOLLAR PRIZE.

The Stanley Dry Plate Company have decided to offer the above prize to be competed for at the coming Convention of the Photographers' Association of America, in Chicago, opening August 9, 1887. This sum will be given as a prize for the best collection of photographs, either landscapes or portraits, made on the Stanley plate and displayed at the coming Convention. Pictures may be of any size. The award will be made on the second day of the Convention by three judges, members of the Photographers' Association, who will be appointed at the time of the meeting of the Convention. The Stanley Dry Plate Company have deposited with E. & H. T. Anthony & Co. $100 in cash, subject to sight draft by the successful competitor, draft to be attached to the certificate of award and signed by the judges.

ANTHONY'S ONE HUNDRED DOLLAR PRIZE.

A cash prize of one hundred dollars will be given for the best collection of untouched enlargements, consisting of not less than three pictures, made upon Anthony's Reliable Bromide Paper, at the coming Convention of the Photographers' Association of America. Each picture to have a private mark of the photographer, and a duplicate mark with the name of the photographer to be given us so that we can advise the judges after the award is made to whom it belongs.

Those competing for this prize will please communicate with us prior to the 1st day of August, 1887, giving us their mark and name.

The bromide paper which we are now offering to the public is coated by the most perfect and the largest machinery ever designed for the purpose, and is warranted uniform in quality, and capable of producing the most beautiful results photographically. It is manufactured under the patent of T. C. Roche, dated May 3, 1881.

After the Convention, all competing exhibitors for this prize will be presented with one dozen sheets of the bromide paper 20 x 24.

The judges will be three members of the Photographers' Association of America.

AIR BRUSH COMPANY'S PRIZES.

This company offers a prize at the Chicago Convention for the best black and white, and one for the best colored picture finished exclusively with the air brush. To each successful competitor a complete air brush, carefully adjusted, and a fine black walnut easel will be given. Price of brush and easel, $55. Total value of prizes, $110.

THE FIRE IN OUR PUBLISHERS' STORE.

The fire in our publishers' store occurred July 12th, on the Mercer street side, and embraced three large floors mostly devoted to the storage of goods. The fire broke out on the chemical floor about ten or fifteen minutes after closing the store, and the goods on the floors burned were about totally destroyed; but the insurance of $150,000 fully covers the losses, which are not yet ascertained. Owing to the large front store on Broadway side being uninjured, business was resumed within forty-eight hours after the fire occurred.

Our publishers are overwhelmed with telegrams and letters offering sympathy, assistance and aid of all kinds. One dealer sent his check and told them to draw on him at sight for what money they wanted. A large number of dealers offered material assistance as well as sympathy. Even their foreign correspondents cabled sympathy.

Although the large Broadway store is uninjured, our publishers are somewhat cramped for room, but business is being carried on with about the usual dispatch.

OUR PUBLISHERS' EXHIBIT AT THE CHICAGO CONVENTION.

We are glad to hear that the fire in the store of our publishers will not interfere very materially with the exhibits they will make at Chicago. In spite of the fact that much of the apparatus intended for Chicago perished in the flames on July 12th, every effort is now being made to duplicate it, and by working night and day our enterprising friends will doubtless rise, phœnix-like, to a position at the Chicago exhibition worthy of their ancient reputation for energy and business enterprise. Although they may not be able to present such an exhibit as was contemplated before the fire, yet the fact that they will make an exhibit at all is greatly to their credit, and shows the interest they take in the Convention. We most heartily congratulate them upon this heroic decision, for it means restless days and nights until the Convention meets, to secure a presentable exhibit.

GELATINO-BROMIDE PAPER.

Notice.

Our readers will doubtless have observed an advertisement of the Eastman Dry Plate and Film Company, inserted in the advertising columns of the Bulletin, in which they offer for sale bromide paper which E. & H. T. Anthony & Co. claim to be an infringement of their U. S. Letters Patent (to T. C. Roche, dated February 8, 1881), and to enjoin the sale of which, and for the damages and profits arising out of past infringement, suit has been commenced against the Eastman Company in the U. S. Circuit Court. As our columns are open to the public, and as the Eastman Company have an annual contract with us for an advertising page, it will, of course, be understood that we do not in any manner authorize the sale of bromide paper by the Eastman Company, but, on the contrary, claim that every one who buys it is liable, with the makers, for damages and profits. The test suit which is being now prosecuted will definitely determine our rights to bromide paper, and meantime, and as we do not wish, in advance of the decision of this test case, to inflict any unnecessary annoyance upon the trade, we rely upon the good-will and good faith of dealers.

E. & H. T. Anthony & Co.

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, APRIL 26, 1887.

(*Continued.*)

I INVITE, and have invited, during the brief period in which I have occupied this position, manufacturers and others to come here and use these rooms in the exhibition of any new designs, or any new process in photography which they may have. I have urged them to come here, and I will say in this connection that I have not the skill to explain the intricacies of their machinery myself. I make the acknowledgment frankly. But the manufacturers or exhibitors of the instruments and mechanisms will come here and explain the details of their exhibits to you, and answer any questions members may choose to ask them appertaining to any piece of machinery which is on exhibition, or any process in photography. I have very little knowledge of machinery, and I propose that the man who comes here with his apparatus shall explain it himself. (Applause.)

I propose that all demonstrations shall be made under the immediate supervision of the inventor or designer.

With this brief outline of our plan, I only want to say a word as to photography in general, and show you how, in my estimation, it is such a very beautiful study—and if I had a son or a daughter growing up, and they talked about purchasing a camera and using it as a pastime, I should encourage it. I cannot conceive of anything that brings out all the nobler qualities of a man or woman better than photography. Is it not refining in the strongest sense of the word? Is there anything about it that is in any sense of the word degrading or demoralizing? It brings all the finer instincts that a man possesses to the front, and by adopting it as a pastime he will very quickly see lines of beauty in almost everything that is presented to him.

I remember very well the time—it is only very recently—that a little bit of scenery never attracted my attention at all, now; however, I find myself, after a few years study ot this art, constantly on the watch for some phase of beauty and symmetry in almost every object I perceive. I see some litttle picture in everything. Perhaps I am a crank on the subject, but I would as leave be called a crank as a great many other names, for it is only cranks that are radical.

Now I have finished, except to say that at the next meeting of this association there will be the usual discussion of questions which will be presented through the Question Box Committee, and I hope to have before us a gentleman (a resident of this city) Mr. Max Bolte, who will probably read an article on Carbon Printing, and will give us a demonstration of the process. It will be very interesting and very beautiful to witness, and a subject which ought to attract a very fair audience here. Notice of it will be sent out to the membership.

A few days ago we were visited by Mr. W. K. Burton, of London, a gentleman who is well-known in the world of photographic literature. He did us the honor of visiting our rooms, and we entertained him with a dinner at the St. Denis Hotel where they had a royal good time. I regret that I was ill and had not the pleasure of participating in the festivities. I wished him God-speed, however, and he took a good dinner with him.

I now have the pleasure of presenting to you our former Vice-President, Dr. Janeway, who has a few words to say to you. (Applause.)

DR. JANEWAY.--*Mr. President and Ladies and Gentlemen:* It is with regret that I was compelled to tender my resignation as Director and Vice-President of this association, but circumstances over which I had no control compelled me to do so. Being attached to Uncle Sam's service, I have been given to understand that my walking orders were in due preparation, and in a few days I will receive them and I expect, very shortly, to turn my face towards the Land of the Setting Sun. In resigning from the directorship of the society I do not intend to withdraw from my membership. (Applause.) I expect to keep up my individual membership as long as I can point a camera and draw a slide. (Applause.)

Now, my duty, Mr. President, is to resign my position and tender to my successors the property of the Question Box Committee. (Laughter.)

I have here a question which a gentleman sent to the Committee, and I regret to see that he is absent to-night. I have two specimens which he sent to the Committee, or rather he sent them to the President, Mr. Walker, then one of the Directors, with the conundrum: "Which is fogged and which is not?" I wish to say that both are fogged. (Laughter.)

I will leave these here and our worthy President can answer the question when Mr. Roosevelt has returned.

There are two other plates here—negatives—with this note: marked "Eccentricities of the Stanley dry plates. There are two good, four bad, and these two execrable."

These plates present minute silver spots on the film, and I showed them to one or two gentlemen who are accustomed to all kinds of spots and things on plates. One of them was a professor at Columbia College, and he said that he had seen such spots, but was unable to say what they were.

Curiosity prompted me to put them under a microscope of fifty diameters, and I find the spots are beneath the film, and I have drawn roughly here the character of the spots as shown by the microscope which will be seen represented mosquitoes, and two birds chasing each other, and other very curious animals.

There is also under the film a considerable amount of dirt and cotton fiber, showing that the plates previous to being coated with emulsion were not as clean as they should be.

I would like, Mr. President, these plates and also the drawings returned to Mr. Roosevelt.

Now Mr. President, in surrendering my office and the property of the Question Box Committee with the statement that there are one or two questions there which I fully intended to have answered, but circumstances would not permit, allow me to make one suggestion. Experience is the best teacher which we poor mortals can have. My experience is that the Question Box Committee being composed of two has not enough members; the duty invariably falls upon one. I cannot complain of my brother members on this Committee, because every time I have asked their assistance they have very gladly acceeded to the request and assisted me very greatly; but I think the Question Box Committee could be improved if it should be composed of five or seven members, and then divided into sub-committees or sections, taking different branches of our art science, and let one member of the Question Box Committee be Chairman, and another one Chairman of a Committee on Chemistry, and another Chairman of a Committee on Photography, and another Chairman of a Section on Manipulations, and another Chairman of a Committee on Optics of Photography, which would include the Committee on Lenses and to a certain extent the Committee on Dry Plates; and you can have other committees or sections as you see fit. Let these sections report to the Chairman of the Question Box Committee, and a member being Secretary of the same, you have a working society in the society itself, which will do you an immense amount of good.

Hoping that the society will continue to prosper and increase more rapidly than it has heretofore, I bid you good-by. (Applause.)

The *President—Ladies and Gentlemen:* I beg to say in this connection that the gentleman who has just addressed you has been one of our firmest friends, and one of the hardest working members of the society, from the beginning of our organization up to the present time. There is no man who has left us whose leaving I so much regret as Dr. Janeway, and I know the members of the society also share with me in that feeling. As he leaves he carries our very best wishes for his prosperity, and we only hope that we can prevail on the Government of the United States to order him back here again. (Applause.) As if in response to what he has suggested and as I intimated in my remarks a moment ago, I have appointed the following committees, which you will see (although he has never mentioned the subject to me) corresponds in a very large measure with precisely what he suggests. In the first place I will read the names of the committees and committeemen who have been appointed in accordance with the constitution.

STANDING COMMITTEES.

House and Purchasing Committee.

William M. Frisbie,
C. C. Roumage, Jr.,
George W. Allerton.

Membership Committee.

John T. Granger,
Daniel P. Read,
Richard H. Lawrence.

Finance Committee.

Richard H. Lawrence,
H. V. Parsell,
T. T. Eckert, Jr.

Librarian.

C. C. Roumage, Jr.

Assistant Librarian.

H. M. Grisdale.

SPECIAL COMMITTEES.

Plates and Developers.

H. J. Newton,
C. W. Dean,
T. E. Schermerhorn,
H. M. Grisdale,
R. B. Roosevelt,
T. T. Eckert, Jr.,
Theodore B. Foulke.

Photographic Apparatus and Lenses.

William M. Frisbie,
Walter Clark,
B. N. Mitchell,
Daniel P. Reed.

Chemistry of Photography.

George B. Allerton,
A. H. Elliott,
H. J. Newton,
Randall Spaulding,
R. D. Jewett.

Photographic Literature.

John T. Granger,
A. H. Elliott,
R. B. Roosevelt,
George B. Agnew,
J. V. Black,
L. Mortimer Thorne, Jr.

Lantern Slides.

Richard H. Lawrence,
William M. Frisbie,
Charles Simpson,
T. T. Eckert, Jr.,
J. Wells Champney,
George H. Fox.

Now we think we have spread this pretty well over the society. Some criticism, I suppose, will possibly be made that where there are so many men on a committee, "what is everybody's business is nobody's business;" but I want the committeemen to understand that they are put there to do their duty, and if they do not intend to do so now is the time for them to speak. (Applause.) The various subjects as they come up for discussion through the Question Box will be referred to the respective committees and we will let them deal with them. If one man has not the time or the inclination, then he can turn it over to his neighbor in the same committee, and thus we will get their united efforts in arriving at a reasonable conclusion. It has been also proposed that these committees fix Friday evening of each week for meeting here, and I hope you will make Friday night a general night for meeting in these rooms, so that we will thus get together some of these committees at that time. I myself think it would be very advantageous to meet here every Friday evening to discuss the questions that may be brought before them, or to confer with each other.

Now, gentlemen, I have the pleasure of presenting to you Dr. CHARLES EHRMANN, the Associate Editor of the *Photographic Times*, who will read a paper, or speak to you, on "Photographing Colored Objects on Plates Bathed with Erythrosin." [See page 302.]

The society then, on motion, adjourned.

REGULAR MEETING, MAY 11, 1887.

President DEXTER H. WALKER in the chair. Meeting called to order at 8 P.M.

The *President*—The first business in order this evening will be the reading of the minutes of the last meeting.

Mr. FRISBIE—I move we suspend the reading of the minutes of the last meeting. Motion seconded.

The *President*—There being no objection, it is so ordered.

Are there any committees ready to report?

Is there any unfinished business before the association?

Is there any new business that anybody has to propose?

Mr. ECKERT—*Mr. Chairman:* A report was handed to the Question Box Committee, of which Dr. Janeway was chairman, and the answer made by one of the members of the committee was also handed in. I am not a member of the committee myself, but nevertheless I beg to hand this in. I also hand in a communication from Mr. Roosevelt. I was requested to hand them to the chair this evening.

The *President*—I will read this communication from Mr. Roosevelt. The following are the questions which he asks:

"*First.*—Is not the time of exposure by far the greatest difficulty in the mechanical part of photography, and can any assistance be given the amateur in determining what it ought to be?

"*Second.*—How do under-exposure and over-exposure respectively show themselves in the process of development and in the negative when developed?

"*Third.*—After developing a plate with a potash developer as far as it will go, can it not be then further developed with a fresh soda or ammonia developer, or *vice versa*?"

The Question Box Committee replied to those questions, and there is a reply here in writing from Mr. Randall Spaulding, which I will ask him to read.

Mr. SPAULDING—This was a paper that I sent to Dr. Janeway in reply to a letter from him, supposing that he would simply use it in making up his report. I did not consider it of any value whatever.

The *President.*—Just read it Mr. Spaulding; anything you write is of value.

[MR. SPAULDING'S COMMUNICATION.]

First.—Correct timing of exposures is certainly a difficult matter. In view of the many variable elements that enter into the calculation, there is, in the nature of the case, no help for the photographer except in experience and close observation. The difficulty is, however, less in proportion to the amateur's skill in developing.

Second.—If the developer be freshly made and of the same temperature, the very short time elapsing before the appearance of the image indicates over-exposure. This test, however, I have never found to be of any practical value.

We may better judge by the color, that is, degrees of intensity of the high lights when they first appear. If the high lights have only a very pale black before the rest of the image appears, the plate is over-exposed, and needs immediately bromide and more pyro. In other words, we can judge by the rate of development, provided the developer be uniformly fresh and the temperature the same.

Third.—As seen in the reactions $C_6H_6O_3 + H_2O = C_6H_6O_4 + H_2$ and $2\ AgBr + H_2 = 2\ HBr + Ag_2$ the oxidation of the pyro is attended by a constant production of hydrobromic acid, and any acid retards the further oxidation of the pyro, and should therefore be neutralized by some alkali. One alkali will neutralize the acid as well as another. After potash, for instance, has done its work, it would be useless to add soda or ammonia, since there is no more acid for them to neutralize. The above reactions are written separately, but are in reality simultaneous. The pyro will cease to take up oxygen and liberate hydrogen when the hydrogen can get no more bromine; that is, when all the bromine that has been loosened, so to speak, by the sunlight has been exhausted. If more alkali be then added it will only soften the film and fog the plate.

I should add that in the development of our dry plates hydriodic as well as hydrobromic acid is produced.

All this is of course *a priori.* I have not experimented in that direction.

Mr. FRISBIE — I move, sir, that it be referred to the Dry Plate Committee.

Motion seconded and carried.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—M. B. writes: Would you kindly look over the following lines, and if possible give your opinion and advice in order to enable me to get a better result. I use a silver bath as follows:

Silver nitrate	120 grams.
Soda bicarbonate	10 "
Water	1 liter.

I dissolve the silver nitrate in half the water and the bicarbonate in the other half, and mix. I fume my paper (double albumen N. P. A.) for thirty minutes, and even more. My gold bath is as follows:

Gold chloride	1 gram.
Acetate soda, crystal......	30 grams.
Water	4 liters.

The paper is floated three minutes on the silver bath. The results obtained are dark blue-black tones when printing, which when immersed in a bath of 20 grains citrate of soda changes very little to red, and in toning (lukewarm bath) begins to fade to light violet, and in fixing assumes a yellow-reddish color of rather unpleasant appearance. Please let me know where the fault is committed and oblige. In drying the prints get a darker color.

A.—We think the trouble is with the citrate of soda. If the solution is not made up perfectly fresh, it will give a tendency to redness in the prints. Try water containing one dram of liquid ammonia in one quart, instead of the citrate bath, and wash slightly afterwards. If the change in the hypo is very marked, it indicates that the printing has not been deep enough and the toning incomplete. Your silver bath is a little weak; better use 130 grams of silver nitrate in the liter. The gold bath is also too weak; use half the quantity of water and one-third of the acetate. Acetate of soda always gives a tendency to brown tones.

Q.—H. B. writes: I toned some prints on Anthony's ready sensitized paper a day or two ago, and every print was blistered. The prints were first washed in running water a few minutes. I used ammonia in the next washing, soaking the prints for from 3 to 5 minutes in ½ dram ammonia to 1 quart water. The prints were then soaked in clear water 5 minutes and toned in carbonate of soda and gold chloride toning bath, then soaked in hypo solution, strength 1 to 8, 20 minutes. The work was done on a mild June evening, and the temperature of the different solutions was the same. I never had so much trouble with blisters before. The paper was not fumed, and I never have fumed my ready sensitized paper, as my printing has to be done whenever I get the time. Sometimes it takes me a couple of weeks to accumulate prints enough to pay for the trouble of toning. The toning went on just as it should have done, and the results were excellent, except for the blisters spoiling everything. There are few things more aggravating, for it means the work of a couple of weeks lost, not to mention the cost of the paper, etc. Can you tell me, through the BULLETIN, how to prevent a recurrence of the trouble?

A.—This is the first complaint we have ever heard of in regard to blisters on ready sensitized paper. Sometimes the ordinary albumen paper will blister, but we have never heard of the ready sensitized paper giving trouble. Try a little salt in the wash water after the hypo, and put 10 or 15 grains into every ounce of the toning bath. We think this will help you.

Q.—J. S. A. writes: Will you be kind enough to tell me, through the columns of the BULLETIN, the answers to the following questions. 1. Can the toning bath be used more than one day after toning 8 or 10 half-size prints, and should the bath be filtered? 2. What is the trouble with negatives that develop up well and lose in the hypo, becoming very thin, and when placed to dry are filled with small light holes through the film?

A.—You can use a toning bath for a long time (several days) if you will keep it clean by filtering it daily and adding gold solution before you begin to tone. An old toning bath always works better than a new one, unless it is very ancient indeed. Negatives that come out thin in the hypo are probably over-exposed, or else they are insufficiently developed. Try some bromide in the developer and develop until the picture can be seen on the back of the plate, or at least the dense parts. Holes in the film come from dirty emulsion or dirty plates.

Q.—L. E. W. writes; Will you be kind enough to send me the dimensions of a top and side light suitable for a room 16 x 35 feet? What I mean is the height from the lowest side and from the highest point. Also how large on top and side light, and how near the floor?

A.—Starting eighteen inches from the floor the side light should run up straight for about five feet and then rise towards the peak of the roof at an angle of forty-five degrees. In regard to the length of the lights, fifteen feet would be good in the room you mention. Therefore the side light will be 15 x 5 feet and the top light would be 15 feet long, and the width will depend upon the slope that can be obtained. The highest point under the light should be at least twelve feet.

Q.—A. J. S. writes: Can I obtain the Gädicke and Miethe magnesium mixture, and at what cost? Also, can I obtain platinum paper ready to produce platinum prints?

A.—The Gädicke and Miethe mixture is not in the market, and we strongly advise everybody not to keep it mixed, as it is highly explosive, and containing chlorate of potassium, is a percussion powder that explodes by friction. It is better to buy the separate ingredients, powder them separately, and then mix them on a piece of paper with a paper-cutter or piece of wood. Don't mix more than you need, and never keep any that is mixed, it is too dangerous. Magnesium powder can be obtained of Eimer & Amend, 18th street and Third avenue, New York City. Platinum paper, ready for use, can be obtained of Buchanan, Bromley & Co., 1030 Arch street, Philadelphia.

Q.—R. S. S. writes: Will you please answer the following questions through the columns of the BULLETIN: 1. What is a safe light for developing plates rendered color-sensitive by means of erythrosin? 2. Are Dallmeyer's patent portrait and group lenses (D) suitable for instantaneous work? 3. If so, what is their relative rapidity compared with the rapid rectilinears—say a 4 D against a 16-inch R. R.? Also, if suited to fast work, what is the most suitable shutter for use with them (the D lenses)?

A.—1. Use a ruby light, shaded with a screen of two or three thicknesses of brown tissue paper; a trial only can assure you that the thickness of the paper is sufficient. 2. Yes, eminently so. 3. They are half as rapid again as the rectilinear. 4. Any good, quick-acting shutter may be used; there are a score of them in the market.

Views Caught with the Drop Shutter.

MR. W. V. RANGER, of the Executive Committee of the P. A. of A., was in New York the other day and spoke very encouragingly about the Convention at Chicago. There is every prospect of a large exhibition and an interesting meeting.

A FIRE in the studio of E. L. Jaynes, at Spencer, Mass., on July 12th, caused damage to the building estimated at $10,000. No insurance stated.

L. M. PRINCE & BRO., the photographic merchants of Cincinnati, Ohio, have just issued a new catalogue of 175 octavo pages. It is a specimen of good taste in both cuts and typography and general arrangement. The handsome figures of the cameras, lenses, etc., of our publishers are well brought out. Another good feature is the incorporation of a number of useful formulas into the text, which makes the volume still more serviceable to the practical photographer.

WE are advised by the STANLEY DRY PLATE COMPANY that there need be no further cause for complaint in regard to mats used as separators for their plates, as they have discovered a remedy which prevents the possibility of the trouble that some photographers complain of.

WE regret to note that W. D. GATCHEL, the well known photographic merchant of Cincinnati, is financially embarrassed. We are pleased also to learn that it is not from any fault of his own, but is due to the failure of the Fidelity Bank. That Mr. Gatchel is an honest and upright gentleman we have always known, and the fact that he still retains charge of his business for the benefit of his creditors is a great satisfaction to us. We hope he will soon recover his former financial stability.

THE fire in the establishment of our publishers was confined to the upper three back lofts which were used mostly for storage, the immense front store being uninjured, which enables them to fill orders promptly, new supplies being daily received from their chemical and other factories.

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EVENING POST JOB PRINT, N. Y.

NEGATIVE ON
STANLEY PLATE

A Snowscape.

PRINTED
EXTRA BRILL

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

AUGUST 13, 1887. Vol. XVIII.—No. 15.

A SEARCH FOR A SUBSTITUTE FOR HYPO.

BY ARTHUR H. ELLIOTT, PH.D., F.C.S.

[Read before the Chicago Convention.]

One of the most useful discoveries ever made in the art of photography was the fact ascertained by Sir John Herschel in the year 1819, that solution of sodium hyposulphite dissolves the chloride, bromide, and iodide of silver. When we take into consideration that this salt, although now made in hundreds of tons every year, was then only a laboratory chemical and very little used, we are surprised that Herschel should have thought of using it. But he did use it, and photographers ever since have blessed him; that is, they have done so if they got clean prints. But in spite of the fact of the wonderful solubility of the silver haloids in sodium hyposulphite, there are numerous drawbacks to its use, and various other compounds have from time to time been suggested as substitutes for this universal fixer of plates and prints.

Sir John Herschel used other solvents for the silver salts, notably ammonia and solution of common table salt.

Fox-Talbot also used a strong solution of common salt. But these solvents never entirely dissolved the silver haloids from paper, and the white parts of the picture gradually acquired a blue color, which, Talbot said, was not unpleasant, probably because he could not do any better. Robert Hunt kept some of these salt-fixed pictures for eight years, and found that they changed very little, except the blue tint acquired by the white portions.

In regard to the use of ammonia, it was found to be a good solvent for the silver haloids, but it also attacked the picture, and there was danger of destroying it completely.

Among other solvents used by the early workers in photography is potassium bromide, which was employed by Fox-Talbot and strongly recommended by him. Gustave le Gray, of Paris, used this solvent in a bath containing 360 grains in a pint and three-quarters, the fixing taking at least three-quarters of an hour; and he says it is better to wait two or three hours. Le Gray also mentions the addition of ammonia to the fixing bath of sodium hyposulphite, and recommends one fluid ounce to every quart of bath, which has a strength of about one in ten. He says this addition gives very pure whites; but the pictures were not permanent.

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During the last year or two the question of using some other solvent for the silver haloids used in photography has again come up, and two substances have been tried; sodium sulphite by Captain Abney, and ammonia by a Scotch photographer whose name has escaped me. In the case of the sulphite of sodium it was found to be too weak a solvent to use as a substitute for hyposulphite, although Captain Abney placed on record his work with it and made a table of its solvent power, which was published in the journals.

Thinking I might find something interesting in this question of the solubility of the silver haloids in various chemical solutions, I have made a number of experiments which I desire to place on record. Although I have not been able to find a chemical compound that will supplant sodium hyposulphite in the fixing bath, yet I have experimented with materials that are solvents of the silver haloids, and this in no mean degree. In every scientific investigation the failures are often of as much importance as the successes, and with this idea in my mind I beg you will accept with charity this record of imperfect work done in the spare hours of a life that is full of engagements and calls to duty.

In the first place I made a solution of silver nitrate of such a strength that one cubic centimeter of it would give 0.01830 gram of silver bromide, 0.02290 gram of silver iodide, or 0.01396 gram of silver chloride, according as the precipitant was bromide, iodide or chloride of an alkaline metal (potassium or sodium). To put this in other words, every hundred parts of the solution would give 1.830 parts of silver bromide, 2.290 parts of silver iodide, or 1.396 parts of silver chloride. The first series of experiments was with silver bromide.

Taking the solution of silver nitrate mentioned above, 25 cubic centimeters were used for each experiment and carefully precipitated with potassium bromide so as to insure the least possible excess of the alkaline haloid. By this method there was secured a precipitate of silver bromide weighing 0.457 gram (7.052 grains), which was carefully washed by decantation and drained from as much water as possible.

The first step was to find out how much of a given solution of sodium hyposulphite was necessary to dissolve this moist silver bromide under constant agitation. As the result of several experiments it was found to require 8 cubic centimeters (about 2½ fluid drams) of a solution of sodium hyposulphite containing 1 part of the salt in 6 of water, which is considered a fair strength for a fixing bath. This solubility of silver bromide means that in a bath of hypo 1 in 6, every part of silver bromide requires 2.9 parts of sodium hyposulphite for its solution.

Taking the same quantity of silver solution and producing the silver bromide in the same manner as mentioned before, the solvent action of ammonia was examined. The ammonia solution had a specific gravity of 0.97 and contained about 7 per cent. of ammonia gas. This solution was used upon the silver bromide without any perceptible solvent action, even when used to the extent of three times the volume of the hyposulphite before mentioned. It appeared that this strength of ammonia was the greatest that could be conveniently used in practice and therefore no further experiments were made with solutions of greater strength.

The next step was to see the effect of an addition of sodium hyposulphite to the above ammonia mixture containing the silver bromide still undissolved. On adding 4 cubic centimeters (about 1⅛ fluid drams) of a solution of hyposulphite

(1 in 3) complete solution took place. Hence, in presence of a 7 per cent. ammonia solution, 1 part silver bromide requires about 2.9 parts of sodium hyposulphite for its solution, an amount exactly the same as in the case of the sodium hyposulphite solution of a strength of 1 in 6 mentioned above. But it must be remembered that the amount of hyposulphite in the bath was only 1 in 21 of water. Therefore the presence of ammonia facilitates the solvent action of the hyposulphite.

A solution was now made by taking equal volumes of a hyposulphite solution (1 in 3) and solution of ammonia of 0.96 specific gravity. This gives a fluid containing one-sixth of hyposulphite and 4.87 per cent. of ammonia. Using the same quantity of silver solution, the silver bromide being prepared as before stated, it required 4.5 cubic centimeters (about 1¼ fluid drams) of the mixture of hyposulphite and ammonia to dissolve 0.457 gram (7.052 grains) of the silver haloid. This means that in presence of 4.87 per cent. of ammonia, one part of silver bromide requires 1.6 parts of sodium hyposulphite for solution. So that in the presence of ammonia a hyposulphite solution of the same strength will dissolve nearly twice as much silver bromide as in the case of one where the ammonia is absent.

Another mixture of ammonia and hyposulphite was now made to see the effect of diluting the bath with ammonia solution. One volume of a solution of hyposulphite (1 in 3) was diluted with three volumes of ammonia solution of 0.96 specific gravity. This gave a mixture containing one-twelfth of hyposulphite and 7.32 per cent. of ammonia. Of this solution the silver bromide, as used in the previous experiments, required 7.5 cubic centimeters (about $2\frac{1}{10}$ fluid drams) for complete solution. Hence one part of silver bromide requires 1.37 parts of hyposulphite for solution in presence of 7.32 per cent. of ammonia. But such a solution of ammonia is too strong to work with practically, and nothing further was done with it, except to keep a record of the experiment.

As the solutlon of ammonia is such a pungent liquid to work with, it was thought that perhaps some of its salts might be substituted for it. With this idea in view, a solution of ammonium carbonate was made containing 1 part of the carbonate in 10 of water. Equal volumes of this solution and sodium hyposulphite (1 in 3) were mixed and used upon the silver bromide prepared as before. The same quantity of silver bromide required 7 cubic centimeters (about two fluid drams) of the mixture for complete solution. Hence one part of silver bromide requires 2.53 parts of hyposulphite for solution in presence of 5 per cent. of ammonium carbonate. We here see that there is but little gain in the use of the ammonium carbonate, and that it is not at all equivalent to ammonia.

Other salts of ammonium were suggested as possible solvents, and the chloride was next tried. A solution of sal ammoniac (ammonium chloride) was made containing one part of the salt in ten of water. This was mixed with its own volume of hyposulphite solution (1 in 3) and used on the same quantity of silver bromide as in previous experiments and prepared in exactly the same way. Of this mixture the silver haloid required 7.5 cubic centimeters for complete solution. This means that one part of silver bromide requires 2.73 parts of hyposulphite for solution in a bath containing 5 per cent. of ammonium chloride. Therefore the presence of ammonium chloride is no material gain as an addition to the hyposulphite bath.

One other salt of ammonium was available and it was thought it might possibly prove useful; this was the acetate. To make this salt, ordinary acetic acid was taken and neutralized with strong ammonia. The solution thus obtained had a specific gravity of 1.055 and contained about thirty per cent. of ammonium acetate. One volume of this solution (which was slightly alkaline with ammonia) and one volume of hyposulphite of sodium solution (1 in 3) were mixed and used on the silver bromide as before. It required 6 cubic centimeters of this mixture to secure complete solution. Hence one part of silver bromide requires 2.2 parts of hyposulphite in presence of fifteen per cent. of ammonium acetate. Comparing this with a solution of hyposulphite of the same strength (1 in 6), but without the ammonium acetate, we note a gain of solubility, but the large quantity of acetate necessary to secure it, makes the mixture too expensive and not worth considering from a practical standpoint.

(*To be continued.*)

EDITORIAL NOTES.

The English Photographic Convention, held in Glasgow July 4th last, was a grand success, about two hundred photographers, professional and amateur, being in session. About eighteen papers were read, and through the kindness of Mr. J. Traill Taylor we are able to give our readers a full report of them in this and future issues of the Bulletin.

As we go to press the great Convention in Chicago is in session, and there is every indication of its being a grand success. There are a large number of entries for competition for the various prizes, and this part of the programme will be extremely interesting, every precaution having been taken to make the competition perfectly fair to all.

As a result of the photographic exhibition in Florence, Italy, there has been formed the Italian Society of Photography. This came about at a dinner which was given at the close of the exhibition, where all present enrolled themselves as members of the new society. Count Bastogi is the president of the new organization.

We would call the attention of those of our readers who live in or near New York, to the joint Field-day and Dinner of the Photographic Section of the American Institute and the Society of Amateur Photographers of New York. Committees of each of these societies have made arrangements for a very delightful outing on September 3d, and as the price is extremely moderate, and any one not a member of either of the societies can go, we hope to see a full attendance. We understand that the number will be limited to one hundred, therefore an early application for tickets is desirable.

The annual exhibition of the Photographic Society of Great Britain will be held in the gallery of the Royal Society of Painters in Water Colors, 5a Pall Mall East, London, S. W., and all the necessary forms and information can be obtained by writing to the Honorary Secretary at the above address. The exhibition will be open from October 1st to November 14th, and no charge is made for space to foreign exhibitors. Entries should be made before September 21st.

Some time ago we announced that the Photographic Section of the Cincinnati Society of Natural History were going to have a field-day, and that Messrs. Sheen & Simpkinson had offered a prize of an Anthony Climax Detective Camera for the best set of three prints and negatives of any size made during the outing. Unfortunately the day set for the meeting was a rainy one, and the time for obtaining the pictures was extended through the month of June. On July the 1st the pictures in competition began to arrive from the sixty and more members of the club. Mr. Leon Van Loo, the well-known retired photographer, of Cincinnati, acted as judge, and selected the three photographs of Mr. George Peck, of the Citizens' Bank, as the best work. Messrs. Sheen & Simpkinson had a system of numbers upon the pictures so that the judge could not know the individual that made them; no marks of any kind, except these numbers, were allowed, hence the competition was a perfectly fair one.

At the exhibition at Florence, Italy, Dr. Edward L. Wilson, of the *Philadelphia Photographer*, received a silver medal for a complete set of his journal from 1864 to 1887. We tender the Doctor our congratulations.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

New Application of Magnesium Lightning Powder—Thieves and Photography—The Intensity of the New Magnesium Light—Amateur Photographic Society in Berlin—The Small 3½ x 4¾ Camera and the Best Lenses for it—Platinum Prints and Portraiture—Formulas for Color-Sensitive Plates.

In my last letter I reported to you about the new instantaneous magnesium pictures of Gädicke and Miethe. The book lately published, and entitled "Photography by Magnesium Light," is surely in your hands.* The excitement which this new method has caused here is shown best by the numerous articles published and in process of publication. Dr. Hitzemann communicates the following application of this lightning light:

"Regarding the invention of Gädicke and Miethe to take instantaneous views with the aid of magnesium lightning powder, I take the liberty to draw attention to an application of their invention which might eventually be of great use. An arrangement can easily be made by which the lightning powder can be exploded electrically, at the same time opening the camera. It is not necessary that the camera have an instantaneous shutter, particularly as the moment of explosion might not coincide with the time of exposure. If the camera is set in focus to a certain distance and provided with a plate, it may serve to control such places at night where burglars might be expected (banks, jewelry stores, etc.), the arrangement being put in motion by electric contact from the door or windows, corresponding in distance with the focus of the camera. A truthful picture of the crime would be in all cases the result."

This proposition deserves consideration, so much more as the discovery of thieves by the aid of photography is nothing new, and has been accomplished in plain daylight several times.

Mr. Schröder reports that he fitted up a camera with an electric shutter for a rich farmer to photograph garden-thieves in the act of stealing, and that one picture was actually taken showing the thief climbing a ladder to a fruit tree. The shutter was set in motion as soon as the ladder was mounted.

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*See notice under head Bibliography.

To myself this new invention is very embarrassing. Not a day passes without the request by some friend to photograph this or that evening party in the salon, in the woods, or at some picnic, by the new magnesium light. There is hardly an amateur in Berlin who has not tried the new process. About the illuminating power of the new light there is also much discussion. The inventors asserted at first that the flash of the light was as great as that of the sun. In the beginning this was laughed at, but it is different now, since Mr. Battin, of Potsdam, has measured the light photometrically with chloride of silver paper. Five grams of the mixture (magnesium, with chlorate of potassium and antimony sulphide) were set off at three succeeding times, which, without reflector, acted upon Trapp & Munch emulsion paper in a manner that three degrees of blackening were produced, of which the first was obtained from 5 grams, the second from 10, and the third from 15. A scale, serving for comparison with sunlight, was taken on the same day (middle of June) at 1 P.M. The blackening obtained from 5 grams of mixture was distinctly visible, but too indefinite to be of any account.

The following table gives the figures in seconds that the sunlight effects the same coloration (blackening) as the stated quantity of magnesium mixture at a distance of 25 cm.

Magnesium mixture.	Sun. Emulsion paper.	Sun. Albumen paper.
Grams.	Seconds.	Seconds.
10	4.5	1.5
15	2.4	2.5

The magnesium powder burning off in $\frac{1}{50}$ second, it follows that sunlight would act in the proportion of $\frac{1}{50}$ to $1\frac{1}{2}$, that is 75 times weaker than 10 grams magnesium powder. But for portraits the powder is burned off at 1 meter and not at $\frac{1}{4}$ meter distance, and has an effect sixteen times weaker; it would therefore be only five times stronger than sunlight. Ordinarily only two grams of powder are used, so that the assertion of the inventors, that their light is equal to the flash of sunlight, seems to be justified.

On the 25th of June an Amateur Society was formed here, similar to those in New York, London and Vienna, and in consideration of the constantly increasing number of amateur photographers it may be of some importance. The desire for the formation of such a club had been expressed to me many times. I thought at that time the best answer to give would be the advice to join the regular societies, and a good many favored my advice. Others again were of a different opinion, the interest of the professional and amateur differing materially in many cases, a good deal appearing of importance to the amateur, *e. g.*, certain positive processes, apparatus that would interest the professional not half so much as the amateur and *vice versa*, with legal questions, studio arrangements, business matters, etc.

Our art has this way won a number of new friends, and if it is considered that a good deal of the progress in photography is due to amateurs, it is to be hoped that the activity of the new club will bear some good fruit. About twenty interested in the formation of the new society met at the laboratory of the Royal Technical High School on the 25th of June. Several gentlemen who were prevented from being present—Professors Slaby, Rietschel, of the Royal Technical High School; Captain Mensing, the artist Possart, Lieutenant Frisch, and Herr Von Voigtlander, (the latter by telegram from Brunswick), all signified by letter their willingness to become members, and the club began its activity the same night by introducing experimentally the system of making negatives by the magnesium light. The Executive Committee consists of Professor Jacobsthal, Major Hedinger, Mr. E. Koerner, Engineer Kirchner, Dr. Lummer, Painter E. Milster, and Professor H. W. Vogel.

Lately small apparatus for 9 x 12 centimeter ($3\frac{1}{2}$ x $4\frac{3}{4}$ inch) pictures has found much favor among tourist photographers. It is to be particularly recommended because it reduces baggage and traveling expenses, and the negatives can be easily enlarged to 8 x 10 or even 12 x 15 pictures, provided they are sufficiently sharp. The latter is easily obtained by the use of only good lenses.

I have found that, ordinarily, two objectives are sufficient for this size of plate, a wide angle and one of greatest depth of light for instantaneous views and groups, the latter with long focus, being at least equal to the length of plate. The longer the focus the longer of course the figures. Wide angle lenses furnishing a visual field of 90 degrees for that size plate we do not yet possess. But there are some approaching this kind which are sufficient in most cases.

The following lenses are for plates 9 x 12 centimeters, showing their proportional focal length and the visual field as calculated:

	Opening.	Focus.	Visual field.		Relative opening about.
	Mm.	Mm.	Deg.	Min.	
Voigtlander VI, Wide Angle Euryscope No. 8	10	82	72	20	$\frac{1}{8}$
Steinheil Wide Angle Aplanat No. 1	5.5	96	64	00	$\frac{1}{7}$
Voigtlander IV, Eursycope No. 0	26	122	52	20	$\frac{1}{5}$
Steinheil Aplanat No. 3	24.8	142	46	00	$\frac{1}{6}$

Therefore either the two Steinheil or the two Voigtlander lenses could be recommended. The relative opening for the objectives as given is of course without diaphragms. The square of the same gives the relative strength of light of the lenses.

It is here shown that the Voigtlander wide angle gives considerably more light than the Steinheil wide angle, so that the former can be focused much easier.

The platinum process being already recognized by all artists, seems at last to be taking root in the portrait line. Mr. Reutlinger, of Paris, having visited Berlin recently, tells me that the platinum pictures were much favored there by the public, and that there was a good demand for smaller sizes, so that he was forced to introduce the process in his gallery. This will add to the recommendation and extension of this certainly excellent process.

As the American journals are at present writing so much about color-sensitive plates, I will communicate to you a few of my formulas for the same.

1. For the production of colored objects (paintings) containing red, also views at sunset with yellow clouds, I recommend the azaline bath.

Azaline, solution in alcohol (1 to 2,500)	20 c.c.
Ammonia	2 "
Water	80 "

Bathe one minute and then dry. Exposure through aurantia glass (flowed with aurantia collodion with three per mille aurantia) three to four times as long as wet. Development as usual. These plates, with good emulsion, will keep for eight weeks.

2. For landscapes with much green and blue (water, moisture in the atmosphere), the erythrosin silver bath.

Erythrosin, solution in water (1 to 1,000)	50 c.c.
Silver solution (1 to 1,000)	50 "
Ammonia	2 "
Water	100 "

Filter. The plates are bathed for one minute and then dried. They will not keep longer than eight days, are twice as sensitive as the ordinary ones, and give also excellent results without the yellow glass, but they are not red sensitive.

Developer.

SOLUTION I.

Sulphite sodium	100 grams.
Pyro	14 "
Distilled water	500 c.c.

SOLUTION II.

Carbonate sodium	50 grams.
Distilled water	1,000 c.c.

Mix one volume No I with two volumes No. II.

BERLIN, July, 1887.

[*From our Special Correspondent*].

ENGLISH NOTES.

DURING the past week I have traveled over 1,100 miles in the service of photography, and for my own delectation. Now this is no joke to a Britisher, more especially to one like myself, who prefers the arm-chair in the study and the bench in the laboratory to even mountaineering and yachting.

I have been to Glasgow, to attend the Second Annual Convention of the Photographers of the United Kingdom. My days have been spent in rushing, camera in hand, over—as it seemed to me—the greater part of Scotland; my evenings in listening to learned dissertations on every conceivable subject; while the few spare seconds that remained were devoted to sampling the "whusky" of my kind entertainers.

Seriously, the Convention was a success. But we tried to do, perhaps, a little too much, and the consequence is the inevitable reaction, which now causes me to gaze languidly at my plate holder and roller slide, and to murmur: "Rest ye there awhile, ye fairy visions of the North; of the Trossachs and Loch Katrine; of Loch Lomond and Loch Tyne; of the white wings of the yachts in the waters of the Clyde; and of stately Edinburgh, the modern Athens. Wait a wee till my wearied muscles and tired brain have recovered their elasticity and vigor, and then I will evoke thy shrouded imagery to be a glad witness to me in times to come of the week I spent in bonnie Scotland."

Glasgow is a great town of half-a-million inhabitants, standing on the Clyde, which here sends forth a positively audible stink, due mainly to the sulphureted hydrogen produced by the refuse from the gigantic chemical works situated on its banks. It is distinctly the exception for the lower orders to wear either shoes or stockings, and they furnished splendid food for the detective camera, many kinds of which were at work. The number of members attending the Convention was about two hundred, including the Chairman (J. Traill Taylor), Secretaries (J. J. Briginshaw, of London, and James Davie, of Glasgow), Professor A. S. Herschel, F.R.S. (son of Sir John Herschel), W. Jerome Harrison, C. H. Bothamley, J. B. B. Wellington, J. Lancaster, J. Place, Wollaston, Cembrano, A. L. Henderson, Edwards, S. H. Fry, Andrew Pringle, Tate (of Belfast), W. H. Prestwich, S. McKellen, W. H. Walker (Eastman Company), H. Bolden, R. Keene (Derby), etc., in addition to a very large number of local workers.

An excellent exhibition of both pictures and apparatus had been collected at the Institute of the Fine Arts in Sauchiehall street (headquarters of the Convention), including an Anthony's detective camera. During the evening meetings eighteen papers were read, and oh the difference between hearing a paper from the lips of its author, illustrated by his specimens, diagrams, lantern slides, etc., and merely reading the same in a journal. Let no one think he can get the benefit of a convention by stopping at home and subsequently reading the proceedings. A very pleasing event was the reception of a telegram from C. Gentilé, of Chicago, the Local Secretary of the American Convention: "Congratulate you. Invite you mail an exhibit for our Convention." We fear the notice was too short to enable an exhibit to be sent off, but the receipt of telegram gave the sincerest pleasure.

The excursions were six in number: (1) to the Falls of Clyde, (2) to the Trossachs and Loch Katrine, (3) Loch Lomond and Loch Long, (4) to Tarbert on Loch Fyne, (5) to the Yacht Regatta at Largo, (6) to Edinburgh. Most of these places were at a considerable distance, so that the programme for each day was somewhat as follows:

Rise at 6 or 6.30 A.M.; Breakfast. Start, by steamer or by rail, 7 to 8 A.M. Return, reaching Glasgow 6 to 7 P.M. Evening meetings commence 7.30 P.M., and close about 10.30 P.M.

In the evenings the lantern displays formed a prominent feature, Mr. Andrew Pringle's racy descriptions and readings being much appreciated; Mr. Briginshaw also gave a well illustrated lecture on Polarized Light.

After the last general meeting on Friday evening, most of the members met at supper at the Bath Hotel, after which an excellent programme of toasts, songs, recitations, etc., was gone through.

Birmingham, the metropolis of the Midlands, was selected as the meeting place for the Convention of 1888, and we hereby offer a cordial invitation to American photographers to "come over and help us." The Convention affords the best possible opportunities for making the acquaintance of English workers, for seeing the results of their work, and for being conducted through the best scenery of the British Isles.

The Glasgow meeting confirmed the opinion of the writer that photographers as a class are "jolly good fellows;" not a discordant note was heard, while all the proceedings were marked by hearty friendship and good taste. The Lord Provost had consented to open the Convention, but being summoned to London to attend a State function, his place was admirably filled by one of those local rulers (Bailie Crawford) of whom Bailie Nicol Jarvie will probably be best known to our readers. By the by we saw the Bailie's famous red-hot coulter with which he fought the Highlander (see "Rob Roy") hanging on a tree in front of the Clachan of Aberfoyle on our excursion to the Trossachs.

All classes of photographers were represented at Glasgow, from the humblest "pro" to the wealthy amateur with his special steamer on the Clyde and his big plates that alone cost him a hundred dollars per day. Some scores of groups were taken, including one on a 34 x 24 plate by Mr. Crooke, of Edinburgh, and four of almost equal size by John Stuart, of Glasgow. The Glasgow men covered themselves with honor, and, in addition to those named above, George Mason, William Lang, Jr., R. Turnbull, George Pell, T. N. Armstrong, J. J. Moran, and a score of others worked hard for the success of the meeting.

Just before leaving, attempts were made to induce your correspondent to don the Highland dress and to photograph him as "Rob Roy;" but "Wait till the Convention comes to Glasgow again, and my calves are a little more developed," was the reply of TALBOT ARCHER.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

JOHN TIMBS, archæologist, "book-maker," etc.

1860. "Stories of Inventors and Discoverers" (Photography and the Stereoscope, pp. 313–324). Kent and Co. 5s.

GASTON TISSANDIER.

1875. "A History and Hand-book of Photography." Translated from the French. Edited by J. Thomson, F.R.G.S. Imperial 16mo. pp. xvi and 326. Sampson Low & Co. 6s.

The frontispiece of this edition is a portrait of a lady by Edwards' phototint process.

1878. Second and revised edition, with an Appendix by the late H. Fox-Talbot. Post 8vo. 400 pp. 60 wood-cuts, and 20 full-page engravings, etc., by various processes. Frontispiece, Woodburytype print of Sir F. Leighton. Sampson Low & Co. 6s.

M. Tissandier is a distinguished Frenchman who is perhaps better remembered for his exploits in æronautics than as a photographer. The book is beautifully illustrated, and the historical information, especially Talbot's Appendix, is very valuable.

CHARLES TOMLINSON, Lecturer on Science at King's College School, London. (Editor.)

1854. Cyclopædia of Useful Arts and Manufactures. 4 vols. Photography in Vol. III, pp. 393–405. Illustrated. New edition, rewritten, 1866. Photography in Vol. IV, pp. 291–303. Illustrated. Virtue & Co. 10s. 6d. per volume. Appendix to above, 1868, in three vols. Photography in Vol. VIII, pp. 536–544. Virtue & Co. 13s.

Ure's Dictionary of Arts, Manufactures and Mines. Edited by Robert Hunt and F. W. Kudler. Last edition, 1878, in 4 vols. 8vo. Longmans & Co. 114s. Photography in Vol. III, pp. 562–575, and Vol. IV, pp. 670–673.

This work contains many other articles on subjects pertaining to photography, and is a valuable book of reference.

DR. HERMANN VOGEL, Professor in the Royal Industrial Academy of Berlin.

1875. "The Chemistry of Light and Photography in their Application to Art, Science, and Industry." International Scientific Series, Vol. XV. 288 pp. 94 wood-cuts, 6 plates. H. S. King. 5s. 1876. New and Revised Edition.

1883. Fourth edition. Crown 8vo. 280 pp. 94 cuts, 6 plates. Kegan Paul & Co., 1 Paternoster square. 5s.

The last edition is practically unchanged, and contains nothing newer than the first, although certain errors of the translation have been rectified. The frontispiece is a Woodburytype print of Rutherford's Moon.

ALFRED H. WALL.

1861. "A Manual of Artistic Coloring as Applied to Photographs. A Practical Guide to Artists and Photographers, containing Clear, Simple, and Complete Instructions for Coloring Photographs on Glass, Paper, Ivory, and Canvas, with Crayon, Powder, Oil, or Water-Colors. With Chapters on the Proper Lighting, Posing, and Artistic Treatment Generally of Photographic Portraits; and on Coloring Photographic Landscapes." pp. vi. and 266. T. Piper, *Photographic News* Office. 6s. 6d.

A. H. WALL, and — TEMPLETON.

1868. "Guide to Photographic Coloring." Rowney & Co., Rathbone place. 1s.

LIEUTENANT (now COLONEL) J. WATERHOUSE, R. A.

1870. "Report on the Cartographic Applications of Photography." 240 pp.

This book gives an account of a tour made by the author to the principal European establishments connected with photo-printing, photography, and photo-engraving.

1878. "The Application of Photography to the Reproduction of Maps and Plans." Calcutta.

This is a reprint of a paper read by the author before the Asiatic Society of Bengal.

Colonel Waterhouse has for a long period had charge of the photographic department of the Indian Survey at Calcutta. He is now Assistant Surveyor-General for India.

W. HARDING WARNER, an excellent professional photographer, good alike at portraits and landscapes. Formerly of Ross.

1876. "Simple Rules for the Mounting and Touching of Photo Pictures, specially designed for Amateurs." Philip, Son & Nephew, London and Liverpool.

ALEXANDER WATT.

1881. "Scientific Industries Explained; showing how some of the Most Important Articles of Commerce are made." 8vo. 203 pp. (Photography, pp. 103–111.) W. & A. K. Johnston, Edinburgh. 2s. 6d.

J. Werge.

1875. "How to Produce Opalotypes without Silver." J. Werge, 11A Berners street. 1s.

1875. "Pictorial Backgrounds and How to Produce Them; to which is added, How to Produce Opalotypes with Ivory Black." 16mo. 24 pp. J. Werge, 11A Berners street; and Piper & Carter. Price 1s., including a photograph illustrating the Background Process.

This pamphlet gives instructions for the application of the powder process to the production of pictorial effects in portrait negatives.

Mr. Werge, is a veteran photographer whose shop, near the British Museum, is well stocked with every requisite.

O. E. Wheeler.

1881. "Practical Photography; being the Science and Art of Photography developed for Amateurs and Beginners." 8vo. 266 pp. Illustrated. L. Upcott Gill, 170 Strand. 4s. Also published in three parts, paper covers, 1s. each.

This is a useful book from the mass of detail which it contains. It originally appeared in the pages of the *Bazaar, Exchange and Mart.*

N. Whitlock.

1841. "Manual of Photography." 8vo. Robins. 1s.

1843. "Photogenic Drawing." 8vo. Robins. 1s.

F. Fisk Williams.

1860. "A Guide to the Indian Photographer." 12mo. 80 pp. Illustrated. R. C. Lepage & Co., 1 Tank square, Calcutta. Appended is a Catalogue of 23 pp. of apparatus, etc., sold by Lepage & Co.

G. W. Wilson, artist and photographer.

1855. "A Practical Guide to the Collodion Process in Photography." 8vo. 44 pp. Two wood-cuts. Longmans. 1s.

"Written originally for private pupils, because the author could find no good elementary treatise not over-burdened with formulas, or with too much scientific matter." Mr. Wilson has long been in the front rank of the profession. His landscape photographs, of every part of the British Isles, are excellent. He has a very large establishment at Aberdeen.

Walter Bentley Woodbury, born at Manchester in 1834, died (from an over-dose of laudanum) at Margate in 1885, was a most prolific inventor. He went to Australia in 1852, and practiced as a photographer there and in the East Indies until 1863, when he returned to England. Among his many inventions we can only mention the famous printing process, Woodburytype, which bears his name, photo-filigrane, the Goupil method of photo-gravure, and various block processes. He introduced the sciopticon to English lanternists.

1874. "The Scenograph Manual." (With cabinet landscape taken with the instrument.) Sciopticon Company, 157 Great Portland street. 6d. The "Scenograph" was a pocket camera, the invention of a Belgian or Candezzi.

C. Ray Woods, astronomer, was Assistant in the Observatory at the Cape of Good Hope.

1885. "The Spectroscope and its Relation to Photography." Piper & Carter. 6d.

A. A. Wood, F.C.S.

1886. "A Photograph, and How to Take It. By 'One Who Knows.' Edited by A. A. Wood." 8vo. 18 pp. E. G. Wood, 47 Cheapside, E. C. Mr. Wood's firm has long been in the front rank of opticians.

Lieutenant-Colonel Stuart Wortley, Director of the Patents Museum, South Kensington.

1871. Official Report on Photography in the International Exhibition (South Kensington) of 1871.

1874. "Hints on Photography without a Silver Bath." This was a pamphlet issued by the Dry Plate Company of which Colonel Wortley was the head. I do not know if I am correct in attributing it to his pen.

A book bearing the title of "Dry Plate Photography" was advertised by Colonel Wortley in the "Year Book" for 1874," but it does not seem to have been published. At all events I can find no trace of it.

Benjamin Wyles, a professional photographer, of Southport.

1886. "Instructions for Beginners in Photography. With a Preface by J. Harris Stone, M.A." Crown 8vo. pp. xii and 117. Illustrated. Scientific Publishing Company, 22 Buckingham street, Strand. Paper covers, 1s.; cloth, 1s. 6d.

The substance of this book appeared in the *Amateur Photographer*, but it has been revised and enlarged, and is a very useful work.

Andrew Wynter.

1869. "Our Social Bees." Second Series. Article on Photo-Sculpture, pp. 263–271. Hardwicke. 2s. 6d.

1874. "Peeps into the Human Hives." 2 vols. Post 8vo. Application of Photography in Vol. II. Chapman & Hall. 18s.

1875. "Fruit between the Leaves." 2 vols. Post 8vo. Carte de Visite and Photographic Pictures in Vol. I, pp. 239–249. Chapman & Hall. 18s.

Dr. Wynter is a popular esayist, and these very readable articles are reprinted from the various magazines in which they had originally appeared.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued.*)

Second Transfer to Canvas for Oil Painting.—The important question to be considered here is that such an absolute and intimate contact between the canvas and the carbon is secured that a peeling off of the carbon picture is almost impossible. Canvas, as generally used by oil painters, is stretched upon a board and its surface is rubbed all over with a strong bristle brush dipped in sufficiently strong potash ley. The brush must be employed until the fiber of the canvas shows, being careful not to rub so hard as to open the spaces between the threads, which must by all means remain filled. When fully dry the canvas is covered three times with a thin gelatine solution made as follows:

Gelatine	40 ounces.
Water	400 "

to which, whilst still warm, a solution of

Chrome alum	1 ounce.
Water	20 ounces.

is added drop by drop. After each application of the gelatine the canvas is allowed to dry thoroughly. The carbon print being upon the flexible support is not allowed to dry, but while still wet is placed upon the canvas which has previously been wetted with cold water. Rubber-cloth and squeegee are applied in the usual way. After drying the support is separated from the canvas.

Transparencies on Glass.—The ease and certainty, as well as the cheapness, of this process will always induce its workers to adhere to it. The beautiful results obtained in carbon transparencies will most assuredly stand unrivaled. The tissue required for transparencies is a special one, *i.e.*, it is charged with much more coloring matter than the ordinary carbon tissue. Its sensitizing and drying is done in the same manner as already described. The exposure to the light has to last at least double the time required for paper pictures. The exposed paper is immersed in cold water and squeegeed to a well-cleaned glass plate, allowed to remain in contact for ten minutes and developed. It is then washed, passed through the alum bath, and dried. Plates with the carbon pictures upon them which are destined for the magic lantern must be pasted to clear glass plates, mounting them in the usual fashion; but those intended for transparencies are mounted with ground glass.

Coloring Carbon Pictures.—Carbon pictures developed upon collodionized plates may be colored in many ways. Since the gelatine absorbs the colors in proportion to its thickness, fluid colors as well as solutions may be used, the latter by double decomposition producing colored deposits. The coloring may serve either to change the color of the carbon print; to strengthen, or better, to intensify it. A saturated, or diluted, solution of permanganate of potash flowed over the still wet carbon print imparts to it a more or less intense olive-green tint. This color is not very pleasant to the eye, but is of great importance for the multiplication of negatives, since it intensifies the image to a much higher degree than the eye would be able to perceive. Beautiful purple tints are obtained by the employment of purple solutions, or artificial alizarine dissolved in water, to which some addition of liquor ammonia has been made. Aniline colors may also be employed, but as they are not fast colors they should not be used on pictures which are exposed to light, as window transparencies, etc. A beautiful dark violet color is obtained by conforming to the late Dr. von Monkhoven's formula, viz., three solutions prepared as follows:

A. 4 per cent. solution.

Sulphate of peroxide of iron	40 grams.
Water	1 liter.

B. 4 per cent. solution.

Carbonate of soda, c. p	40 grams.
Water	1 liter.

C. 1 per cent. solution.

Gallic acid	10 grams.
Water	1 liter.

The carbon picture is immersed for five minutes in bath A, washed with clean cold water for a few seconds, and immersed for ten minutes in bath B, from which it is withdrawn and washed again. Holding the plate against the light it will be found to have assumed a slight reddish tint. The picture is now immersed in the third bath, C. where it is allowed to remain a longer or shorter time according to the degree of density which is desired. The print may be withdrawn from the solution for examination as often as required. A thorough washing is finally given and the plate allowed to dry. It is best not to print the paper too strong.

A dark blue-black tint is obtained by using the following solutions. Extract of logwood is dissolved in warm water, which solution when sufficiently cool is poured upon the still wet carbon picture. After this application the print is washed for a few seconds and a three per cent. solution of bichromate of potash is applied for three seconds. These solutions, in alternation, may be applied repeatedly until the desired tint is obtained.

It sometimes happens that the carbon tissue does not adhere well to the glass plates, or, during development and the following manipulations, leaves it. When this should happen it is better to proceed as follows. Instead of squeegeeing the exposed tissue to the clean glass plate, a perfectly clean French glass plate, a little larger than the intended print, is collodionized with clear collodion and allowed to dry for some hours in a place free from dust. Before applying the collodion this plate is *not* waxed; and must *not* be immersed in water, as is generally done to free the collodion from the alcohol. The carbon tissue is sensitized in the usual way, placed carbon side down upon the collodionized side of the plate, and squeegeed into intimate contact, and the plate with the sensitized tissue upon it is allowed to dry. The carbon paper prepared in this way remains sensitive and good for at least seven days, provided that the paper be covered with a glass plate to protect it from the air. If a number of plates have been prepared in this way they are laid one on top of the other, protecting the uppermost, as stated above. Careful laying of the sensitized carbon tissue is absolutely necessary, for if it once lays flat it would not be possible to withdraw it from the plate without tearing the collodion film. The drying will take about three hours.

It is better to prepare these carbon sheets of larger size than required, for the manipulations are almost the same for a large sheet as for a small one. Before use for printing, the required size of the tissue is cut from the plate, leaving the remainder in contact with the latter. Paper which has been prepared in this way shows a highly brilliant, even surface, and will lay in most absolute contact upon any negative, and as the optical contact is, so to speak, perfect, it will give much sharper and finer prints than the tissue which was dried in the free air and in the usual style. The exposure to light is affected in the same way as usual, but before developing the paper is placed in a tray containing slightly acid water (1 part muriatic acid to 1,000 water.) It must remain longer than usual in the water, as it is essential that the gelatine absorb as much as possible, for without this precaution it might easily become reticulated. When well saturated the paper is placed upon a clean glass plate, and, without using the rubber-cloth, is squeegeed into contact. Should the borders not adhere the paper may be weighted down by a heavy glass plate, when, after thirty minutes, it will lay perfectly flat. The development should never be made sooner than thirty to forty minutes after the last manipulation. It is prudent to begin the development with rather lukewarm water of not over 82 degrees F., and only later on to use hotter water.

Should the collodion peel off during development, it would be better to allow two hours' time for the paper to remain in contact with the plate before development; or to collodionize or gelatinize the glass plate, or to flood the plate with a thin solution of gutta-percha in chloroform. The paper adheres splendidly to this last substratum, which must be perfectly dry before the application. Transparencies sometimes require a little intensification, but when the plates have been gelatinized the following solutions cannot be employed, since they would tint the substratum also. Transparencies on clear glass or on collodionized plates may be treated with the following solutions:

No. I.

Permanganate of potash	4 parts.
Water	1,000 "

No. II.

White sugar	2 parts.
Ammonia	2 "
Water	1,000 "

Equal parts of these solutions are mixed in a tray into which the transparency is immersed for some seconds. Its color becomes a yellowish tint. This way of intensification offers the advantage of only changing the actinic value of the print without producing any granular deposit upon the plate, as the intensification with logwood and other materials always do. Retouching is done with a leather or paper stump and the finest graphite powder.

(*To be continued.*)

INTENSIFICATION.

BY W. B. BOLTON.

[Read before the British Photographic Convention at Glasgow.*]

I HEARD an amateur remark a short time ago, "I never intensify," and I felt inclined to retort, "Perhaps it would be better if you did;" but as I thought he might recognize the truth of the reply, and as I did not wish to hurt his feelings, I refrained. It is all very well and very pleasant, no doubt, to be able to dispense with the operation of intensification, but who that values his reputation for uniformly good work will undertake to do without it altogether? It is absolutely necessary at times, even under the best of arrangements and the most careful working, and he who says "I never intensify," is either a perfect manipulator—which I don't believe—or a careless one who takes little true pride in his work, which is more likely.

But intensification has got into sad repute in connection with gelatine plates, owing to the liability of the intensified image to change, fade or become denser with time and exposure to light. This applies equally to all forms of intensification. Though mercury, in some of its forms, has secured the worst reputation, still I have little hesitation in expressing the opinion that the instability is not due to the method of intensification, but to the want of care in preparing the film to receive it. I have negatives which were intensified seven and eight years ago, by one of the most distrusted of mercurial methods, that are as good to-day as when newly done; I have others, or the remains of them, that exhibit every form of defect that can come from mercurial change.

Silver intensification on the other hand, though the practically universal method employed with collodion plates, has gained little favor with gelatino-bromide workers, on account of the liability to stains and discoloration of the film during the operation itself; while it has even been alleged that a gelatine film which has been touched by a solution containing a soluble silver salt is doomed to discoloration sooner or later.

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*From advance sheets from Mr. J. Traill Taylor.

With regard to the liability to stains, I have frequently endeavored to show that it is far easier to prepare the gelatine film for silver than for mercurial intensification, but the difference is that a degree of carelessness that suffices in the case of silver to produce immediate change will be more tardy, though no less sure, in its effects when mercury is employed. The change produced in the one case is, in fact, instant and complete; in the other, deferred, gradual and incapable of check. With silver, with only moderate care, the change or stain may be but slight; with mercury, under similar circumstances, the utter ruin of the negative is only a matter of time.

Concerning the alleged after-deterioration of silver-intensified negatives, I can only say that I have some that were treated in that manner in the summer of 1880, and which up to the present time have exhibited not the faintest sign of any sort of change; and I will say further in connection with them, that if there be any virtue in the oft-vaunted "wet plate character," they possess it in far greater degree than others treated in a different manner, or not intensified at all.

Silver intensification is, and always has been, my favorite when permanency of result is required (if a negative be only required for temporary purposes it is not worth the trouble), and recently I have modified my method of using it. Previously I have adhered to the formula frequently given in the *Journal* and Almanac, in which plain solutions of pyro, and of silver acidified with citric and nitric acid, are used; but latterly I prefer to employ a solution of pyro, citric acid, and glycerine, with a separate solution of silver acidified only with nitric acid. The advantages of this method are that the solutions will keep indefinitely, or practically so, and that the glycerine causes the solution to flow readily over the film, enabling the operator to use a very small quantity by pouring on and off the plate, and thus economise silver, as well as saving the trouble of freeing the back of the negative from the dense deposit of silver that occurs when a dish is used.

I make the following stock solutions:

A.

Pyrogallic acid	10 grains.
Citric acid	2 "
Glycerine	1 ounce.
Water	1 "

B.

Nitrate of silver	60 grains.
Nitric acid	30 minims.
Water	1 ounce.

For use dilute one part of A with two parts of water and pour one part on to the plate, leading it to the edges with the finger or a camel's hair brush, if it refuse to flow alone. One dram of pyro solution mixed with two drams of water suffices for a half plate. When the solution runs smoothly over the whole surface return it to the developing glass, into which half a dozen drops of B have been placed, and again apply the mixture to the film, keeping it in motion all the time. The density comes rather slowly, and it should be borne in mind that it increases greatly on drying the negative, so that allowance must be made for that.

The only preliminary preparation the negative requires after fixing is a thorough washing, but this may be supplemented by a minute or two's soaking in alum and hydrochloric acid as a final precaution, Removal of the hypo by means of eliminators, instead of washing, is worse than useless; besides which, other substances, as the hypochlorities, hydroxyl, or even alum when long applied, destroy the power of intensification. The negative is therefore better if simply washed. Should a slight yellow stain appear after prolonged treatment, it is easily removed, after the operation is complete, by a short reimmersion in the alum and hydrocholoric acid, provided it is only silver stain and not hypo. The final dip in alum and hydrochloric should always be given in order to destroy any free silver that may remain.

Intensification is more rapid before fixing than after; but unfortunately with gelatine plates it is most difficult to judge accurately of the density. It may often happen however that when a very thin image has to be treated, the application of the intensifier before fixing will prove advantageous.

CONCERNING STEREOSCOPIC PICTURES.

BY W. M. ASHMAN.

[Read before the British Photographic Convention at Glasgow.*]

The renewed interest evinced of late in methods of procuring stereoscopic rotundity in photographic presentments, appears to the writer likely to prove of such beneficial importance to professional workers and dealers in the material used, that reference to the subject will not, I feel sure, be altogether out of place among the topics ranged for profitable discussion at the Convention meetings.

That photographers who depend for sustenance upon their financial successes in the practice of the art have suffered severely from the general depression—and possibly other causes—is now an open secret, and if the signs of recovery are not entirely wanting, they are at any rate a trifle obscure and undecided in their character. The best, or an effective, method of circumventing the machinations of the enemy whose identity is so difficult to trace, is the problem which a good sprinkling of the population (photographic) would like to solve.

Doubtless the section of photographers whose interests have been unintentionally imported into these jottings will be supported by abler exponents than myself. I therefore refrain from further remarks in that direction, and pursue the theme which possesses the possibilities of a successful future.

Perhaps some members of the Convention now present have had a large experience in the commercial production of stereoscopic photographs, especially as far back as in the fifties and early part of the sixties, and these gentlemen might possibly add the valuable hints gained in their practical acquaintance with the work to the volume of information disclosed by our good friend Taylor in the last *British Journal* Photographic Almanac, then we may see the stereoscope in every household long before the nineties are reached. Of this I feel confident, that if such additions are not made to the knowledge already so freely distributed, then it must be assumed that there is nothing further to be said about the matter.

There is one point which has impressed itself upon the writer rather strongly in connection with the subject of making stereoscopic slides, which, under suitable circumstances, might very probably prove of exceptional value as a commercial speculation, and that is the photographic representation of family and other groups in natural positions. Successfully achieved, such a style of presenting portraits would certainly be appreciated, and, in all probability, supplant the flat looking, very much thrown together and heaped up mass of inanimate form sometimes designated a family group likeness. Whether such a dire catastrophe would indeed follow a perfect, or approximately perfect, stereo, little matters now, my intention being to direct notice towards a means of interesting the general public in order that the fraternity may derive some definite advantage.

Believing firmly in the prospect of a demand for group photographs such as those indicated, I should like to trespass on your patience a step further and intimate the kind of instrument which I think suited for carrying out the suggestion. The ordinary portrait combination ranging between four and a half and six inches focus will be found as practicable as any. Although it would be inadvisable to use such a lens at full aperture, the employment of a small diaphragm is not only unnecessary but positively objectionable if one desires to secure soft, harmonious, well-rounded impressions. Then, again, if complete success is to be attained in this class of work, anything short of a commodious and well lit studio cannot be relied upon. Properties, many and varied, have to be requisitioned, and the means of properly illuminating the same ought to be under perfect control.

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* From advance sheets from Mr. J. Traill Taylor.

With regard to pairs of lenses for securing two images from different points of view at the same time, I must say that I have never met with two instruments absolutely accurate when paired. There is always something wrong about one of them either in focal length or brilliancy of image. This may not be the general experience however.

With the routine of ordinary manipulation I will not occupy your time, but pass to one other form of slide which can be made exceedingly interesting. That to which I desire to draw attention is the subject of interiors of dwellings, churches, and also exteriors generally, such as street views. Many of these, when illuminated and deeply printed to convey the idea of night, afford much amusement. As most of those present know perfectly well, these effects are produced by coloring the back of the print similar to the method of coloring crystoleum. The print is backed up with a suitably colored ground, and where lights are required, such as candle or gas flames, holes corresponding with the position are punctured with a needle point. Slides of this description are examined by transmitted light like ordinary transparencies.

Sufficient has been brought under notice to raise an opinion on the possibility of progress in the direction indicated, and should these hurried and disjointed sentences fail in their object, to the lack of careful preparation must their failure be ascribed.

OUR ILLUSTRATION.

Last February, when we were having those long and frequent snow-storms, we received quite a number of pictures of beautiful snowscapes, and among them were some exceedingly handsome ones from our friends Marshall Brothers, of Cazenovia, N. Y. These pictures were so beautifully and so artistically taken that we at once opened correspondence with our friends, and have been fortunate enough to obtain from them copies of these pictures to illustrate this issue of the Bulletin. The entire work upon the pictures has been done by Marshall Brothers, and reflects great credit upon their good taste and photographic skill.

ANNUAL FIELD DAY AND DINNER OF THE PHOTOGRAPHIC SOCIETIES OF NEW YORK.

There will be an excursion under the auspices of the Photographic Section of the American Institute and the Society of Amateur Photographers of New York on Saturday, September 3d. The commodious steamer Blackbird has been engaged, and will leave the foot of Franklin street, North River, at 9.30 A.M. sharp, cruising around the waters of New York until 1 P.M., when she will land at the foot of 31st street, East River, for the accommodation of those unable to start in the morning, and will then proceed to Glen Island, where a dinner will be provided.

Tickets, $2 each, including dinner, can be procured at the American Institute, Clinton Hall, 8th street; the Society of Amateur Photographers, 122 West 36th street; Scovill Manufacturing Co., 423 Broome street; Anthony & Co., 591 Broadway; or of the undersigned committee:

J. B. Gardiner,	G. R. Allerton,
Dr. O. G. Mason,	J. H. Wainright,
Dr. A. H. Elliott,	Edward Leaming.

I cannot do without the Bulletin. John Esmay.

ANTHONY'S
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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
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E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

DISCUSSION ON PLATES AND DEVELOPMENT.

THE *President*—This meeting is called to deal more especially with general discussion relating to plates and their development; and of course we want to hear from everybody in the room all they have to say on the subject. In order to start the discussion, I will read a paper, which may be of some interest to you, which was written by Lieutenant C. L. Bruns, of the United States Navy, who is now present and who requested me to read it. The paper is entitled "The Proper Time for Exposure of Dry Plates" (see page 406), and afterwards I propose to read a paper hurriedly written by myself relative to experiments made in the same direction. I hope you will not consider it egotism on my part to read what I have written, nor is the method of timing suggested altogether new, but I assure you it was written with the intention of calling out argument, in which all are invited to participate freely. It is a question of the most vital importance to us all. [Lieutenant Bruns' paper read.]

Mr. ATKINSON—How about the rapidity of the lens when you use a rectilinear?

The *President*—Well, as to that it would not do to take different lenses as a basis for one set of calculations.

Since Lieutenant Bruns' paper was written I have experimented further, and formulate the following as the result. [See page 407.]

Mr. NEWTON—Now Mr. Chairman, the plate you exposed thirteen seconds produced the same negative as the one that was exposed four seconds, did it?

The *President*—No, sir; you have made a mistake in regard to the time of the exposure. I said thirty seconds. As I understand, you want to know if that thirty seconds' exposure gave us as good a negative?

Mr. NEWTON—I want to know whether it gave the same negative as the plate that was exposed four seconds gave. That is what I desire to know.

The *President*—Precisely.

Lieutenant BRUNS—You said that was a supposable case. You are simply illustrating the rule.

The *President*—I say that if a plate was exposed thirteen seconds that we would get equally as good negatives with an exposure of that length of time as you would with the one that was exposed four seconds.

Mr. NEWTON—You didn't do that?

The *President*—No, but I have tried it in the room upstairs, where we exposed one eight minutes on this theory, when everybody standing around said expose it from forty seconds to an hour and a half. At four o'clock this afternoon we were exposing this plate, not thirteen seconds, but we exposed it after making the calculations I have given you, and following them, exactly eight minutes and forty-four seconds.

Mr. FRISBIE—You mean by adopting the idea suggested in your paper you can get the exact time to expose your plates?

The *President*—Yes, any time of day. This paper which I have just read involved an immense amount of figuring, and I do not conceive that there is any possible way by which this could be put in any other shape than it is. Lieutenant Bruns and myself read it over and it is as brief as it can be stated. To arrive at these figures was a matter of considerable trouble. You have no idea of the amount of labor involved in the work. You don't have to expose a plate every day. You go out and take a picture to-day for instance, and find that a clear brilliant sunlight actinizes paper in a given time. You may take that time as the basis for several days' work.

Mr. ATKINSON—If there is no sunlight?

The *President*—Then you do not expose the paper.

Mr. ATKINSON—Then you cannot tell anything about it. I merely say that, because for four years I used that very test in printing carbon prints. I had a small negative with a printing frame marked from number 1 to number 12, and there was a slip of sensitized paper placed in that, and there have been times when I got fair negatives, but I consider it very unreliable.

The *President*—In regard to the constant (by which I mean the non-variable figure) upon which all this is based, the sensitized paper is exposed when the sun shines and you get a figure, which, as I say, lasts you all the year round. It is immaterial whether the sun never shines again. You have got nothing to do with that. You do not have to ascertain a new constant, you use the same one. But you expose a piece of sensitized paper to the light, whatever that light may be, and that gives you the second figure in your problem by which you arrive at the third.

Mr ATKINSON—*Mr. Chairman:* If you are testing bromide with bromide of silver, or chloride with chloride of silver, that would be a different thing, but you are testing one thing with another here.

Mr. RIPLEY—What do you say about the gaslight, Mr. President; I can take a picture by gaslight. Dry plates are made with bromide of silver and the condition of this is in an entirely different state in the gelatine plate than in the albumen film, and is affected differently by the light and by different kinds of light, and I say that I can get a good picture in half the time by gaslight. You cannot blacken the albumen paper by gaslight.

Mr. SPAULDING—You did not exactly perform that experiment upstairs, as I understand you, Mr. Chairman, but you got to work about four o'clock, and you didn't actually blacken the paper in the room.

The *President*—Yes, sir, I did.

Mr. SPAULDING—I think you took it into the sunlight.

The *President*—We took the entire piece of paper in the sunlight.

Mr. NEWTON—*Mr. Chairman:* It would undoubtedly be a valuable acquisition to photographers, whether professional or amateur, if you could come into the possession of some infallible guide in reference to timing any particular plate. The experiments that you have named I tried quite a number of years ago in a little different way. I made a little round metal cylinder about three inches in diameter. It shut together, allowing for the roll of albumen paper half an inch wide to come out of a little thin slot; and instead of depending on the light to color the paper I painted the color, pulled the paper out of the slot this way [indicating], and painted the color which albumen paper would come to in a given time, and my experiments with the albumen paper showed me satisfactorily that it was not reliable, especially in different colored lights. You take an orange-colored light and it will act upon the chloride of silver about as quick as a white light. That is, any professional photographer who is printing on a day when the sky is clear and has a yellow light, will print his prints as quick as he would if it was a white light, and the action of that light on the bromide of silver would require at least double the time; and again, when it begins to be late in the day, say five o'clock this time of the year, it is not a very difficult thing to make an instantaneous picture, but it will take a pretty long time to make a print on a piece of chloride of silver paper.

Then again there will be a little variation in your paper unless you try it every day, and your standard would be likely to vary the sensitiveness of your chloride of silver paper.

It is not generally known, I suppose, that some acids are an accelerator and increase the sensitiveness of the chloride of silver. But I have made experiments in that direction, and I took what we call plain paper (starched or ordinary plain paper) and sensitized it. I once had occasion to make a picture that took all day to print it under a leaf. I wanted to get the anatomy of a leaf and it was a dark green, and I had to expose that sensitized paper all day, and the next day I sensitized some paper and after the wet had got off the surface of it I laid it, back down, on a five-grain solution of citric acid. Now that increased the sensitiveness of it at least six times, and I could make the same print in two hours that it took me all day before to make. And whether the ordinary albumen paper is fumed would make a great difference in the action of the light upon it. In the exposure of a plate my rule is to over-expose always, that is for a normal developer, and then I commence very weak, very low down. I make up my developer of the ordinary strength, and I take a little of it and put it in water and commence very weak, and I always have it a sure thing if I have got the right exposure. I have a couple of negatives (I would have brought them along if I had thought of it) one of them was exposed two seconds and the other twenty seconds, and any one looking at them and examining them would say that the two seconds' one was the one that was longest exposed, simply by the way that they were developed. One of them was exactly as good a negative as the other.

There is a great deal to be said on developing negatives, and I am not sure that everybody will ever come to making one as good a negative as another. There are constitutional impediments in the way. You cannot educate some people so that they know a good negative when they see it (laughter), and they never will succeed except by chance in making a good negative. Now it is one thing to observe and another thing to perceive.

I had a book-keeper once in my employ who could not tell blue from green, or red from yellow or anything of that kind, though he was an excellent draughtsman and a fine musician. His ear was all right, but he could not discern the difference between colors. I might say that the color of that book, for instance, is green and the other side of it is blue, and I would turn it over for instance, and ask him which is which and he could not tell me. He would say that there was some difference, but which would be the green and which would be the black and which would be the yellow he could not tell. You could not educate that person; and a person that is undertaking to develop a negative after the plate has been exposed has got to have the faculty of perceiving as well as of observing. That is quite essential. Of course a person can by perseverance educate himself and overcome a great many of these difficulties.

Now I had a gentleman that used to come to my house—a scientific gentleman, too, he was—quite a number of years ago when I was making collodion emulsion,and I gave him the formula and he made it, and he came to my house two or three times a week and begged me to do it because he could not make a negative that was good for anything. It was all fogged. He said that he had followed my directions exactly, and as I had given them to him; nevertheless he said the plate would be fogged. He would take his emulsion and make a negative and would come back the next day and bring me some of his results; they were utter failures. But he was indomitable. He stuck to it for six months and he finally overcame all those obstacles and can make as good a negative to-day as anybody. Now another person would do that same thing after trying three times.

A young man last summer came to me and I got him an outfit, or rather I assisted him to get one, and I took him up the Bronx River and Williams Bridge and showed him what a good picture was; and after trying three or four times he made such beautiful negatives that Anthony solicited his pictures to exhibit them in the BULLETIN, and he makes just as good pictures as you see in the BULLETIN. That is the difference between people. One man has a good deal of a job on hand when he undertakes to make a negative, and that work to another man would be a very light job. The same as one person is a good mathematician and it don't bother him at all to solve a problem, while another is a good chemist, and another is a good musician. You cannot make a chemist out of a musician, or a musician out of a chemist, and it is just the way with an artist. You cannot make an artist out of everybody, and a person in order to be able to make a good picture has got to be an artist as well as a chemist.

Mr. SPAULDING—I have not very much to say, Mr. Chairman, except that I think Mr. Ripley and Mr. Newton have come practically to about the same conclusion, and it seems to be a very reasonable one, though I have not experimented on it.

If I had a weight of 300 pounds to move across this room and I had another weight of 3,000 pounds to move across this room; supposing I could move the 300-pound weight across the room in five minutes, how long would it take me to move the 3,000-pound weight across the room? Why I could not move it at all, and it seems to me, Mr. Chairman, that this question of the sunlight has about something of that sort of thing to do in this case.

It has been said that a great many of our plates contained both the iodide and bromide. It may be the sunlight when removed to a certain degree, as it is on dark days for instance, cannot do work at all. If we believe the philosophers who tell us about the atomic theory of matter, these molecules are made up of certain atoms, and the sunlight has got something to do with the atoms of that molecule. There are a great many people who believe in the physical theory, and there are a great many people, Captain Abney among them, who believe in the chemical theory. But the sunlight has got something to do with the atoms of the bromide or iodide; it has got to produce a certain change in the atomic condition of the molecule, and whether it can do that depends on the strength of the sunlight and also on the weight of the atom that has got to be moved.

Now, Mr. President, it might be that what you have suggested in your paper is quite available within certain limits, but it would not be available under other circumstances, and I do not believe, with all due deference, that it is well to claim too much for it.

The *President*—Well, gentlemen, we made the test with a view to having this matter brought up for discussion here. We are not infallible, as you are probably well aware; but, acting on the theory which I have suggested, and, after figuring elaborately and carefully, you see the conclusion which we reached, and here is the negative made upon the basis of those figures about five o'clock this afternoon. We simply put the plate holder in its place, exposed it by the watch, and there is the negative.

Mr. NEWTON—In some instances some plates might be exposed twice as long as others, and by manipulation, by which I mean the development, you cannot tell which was exposed ten minutes and which was exposed five minutes, they would be so much alike.

The *President*—I quite agree with you that considerable can be done in developing.

Now, as an example of what you just said regarding development, by which I mean the manipulation of the plate in the developer, to bring about a result that nobody expected except the man who manipulates, I made a lantern slide for a person who is here now, and there being seven persons present, and several of large experience, I asked them to say how long exposure I should give the plate. They looked out of the window, looked wise, and varied between ten seconds and ninety seconds. We took the average of them, and made it thirty-five seconds. After exposure of one plate for ten seconds and the other for thirty-five seconds, I went in the dark room and developed both of them, and after they were developed the most learned photographer among them all picked out the one that had been exposed the least and said it was exposed the longest. (Laughter.) It only shows you what opinions are worth as a rule.

Now you ask, How was it done? Why it was done in the development of the plate. I manipulated that plate; I juggled that plate, as you say, into being that which it really was not, that is, giving it strength and density; that which would never have happened except for being handled very carefully in the developer; and the plate which had been exposed the longest I handled very carefully and kept back the development and didn't hasten it. In other words, I juggled that too, and the result is I got two excellent negatives.

Mr. RIPLEY—*Mr. Chairman:* This question of over-exposure and under-exposure has been discussed quite lengthily and intelligently in the English papers for a year or more back, and a writer said that there was a very great question as to whether there was in fact such a thing as over-exposure and under-exposure, and I want to say that the article was a very sensible one, and he came to the conclusion that over-exposure and under-exposure depended altogether on the developer that was used and upon the man that handled it.

Take our modern dry plates, both of the English and American manufacture, and there is a great deal more latitude in them than we are inclined to think. We make an exposure and throw our normal developer on it and if it comes out right the exposure is correct, but a great many of us take no pains at all to decide as to whether it is going to be right or wrong, and if we think it is going to be wrong we take the proper steps to save it, as instanced by the negatives that Mr. Newton mentioned, and the two lantern slides that you yourself mentioned which you took this afternoon. With intelligent and careful workmanship you can expose two identical plates the extreme of short and over-time and still secure good negatives, and you can't tell the difference between them, and it is hard to get a test that will tell what over- and under-exposure is.

Mr. NEWTON—*Mr. President:* I can relate a good story in regard to exposure and development, and it is like the experience of Mr. Beach, our former President. Mr. Beach made a picture of an electrical machine; and he made an exposure of four minutes, in our room down at the corner of 32d street and Broadway, not a great way from the window. The developer that we were using at that time was quite a sudden developer, and was made of half soda and half pyro, and the normal quantity of alkaline solution, and was one dram to an ounce of water, or seven drams of water to one dram of alkaline solution which made the normal developer.

Now, after exposing four minutes on that machine, we took the plate in the dark room, and I rather expected it was pretty long exposure, and we started at first pretty weak, and we prepared a developer in this wise: We took four ounces of water, and into that we put three drops of alkaline solution, and then put the pyro in the preparation, and we got a couple of as fine negatives as you ever saw.

Dr. PIFFARD—You used the pyro in proportion to the soda you put in?

Mr. NEWTON—We used pyro in proportion to the quantity of water, and my recollection is there were three drops of the alkaline solution to four ounces of water.

Mr. RIPLEY—How many grains of pyro did you have?

Mr. NEWTON—Two grains to the ounce, eight grains. I have used weaker developers than that, but that was a very weak developer.

Mr. RIPLEY—Mr. Newton's method of developing that plate reminds me of the advice he gave me when I commenced photography a number of years ago. A young friend of mine got an outfit and came to me for instructions, and said he wanted to take an apple-tree in full blossom, and he wanted to take it in four seconds, and he made a mistake and gave it four minutes, and finally discovered his error before attempting to develop the plate; and, as I say, he brought it to me, as he was very anxious to save it, and I told him I would try to save it for him, and I adopted just the course Mr. Newton speaks of, and I made a very acceptable negative, quite equal to this one that Dr. Piffard has passed around.

The *President*—What have you more definite to say about this method, or theory, that has been proposed? Have you got anything very strong to say against it; if so let us hear from you? What is your objection to it, beyond what you state? In my opinion you have not hit the nail on the head at all, if you will allow me to say so.

Mr. RIPLEY—Why, we prove it is non-scientific, and we prove that it is useless.

Lieutenant BRUNS—What is there, I ask, in photography that you know is scientific? Is there anything that is scientific in the art?

Mr. RIPLEY—There is a good deal in photography that is scientific, but it has never been found out. Take the best chemists of the world and no two of them will give you the same reason for the same result. Why collodion sensitized to-day to take a photograph will give you a certain result, and that certain collodion kept a month will give you a totally different result in the way of producing a picture, is something that nobody can tell. We know it does do it, but we cannot tell why. I may mention that as one instance.

Photography, as a science, is very largely tentative, and the relation of cause and effect in it is very little understood. There is lots of science in it, but we don't understand it.

Lieutenant BRUNS—I agree with Mr. Ripley that there is lots of science to be found in photography, but I have been a member here for nearly a year and was so conditioned that I have been unable to come here until perhaps three or four months ago, and there is a good deal that has been said here during your meetings that I would like to have heard, because I have no doubt I would have learned something. I had studied up the subject of photography, the theory of it, and the chemistry of it, and I thought I knew something about photography, and I thought all I would have to do would be to come around here and say "Smith, give me your developer," and that was all, and point the camera and it was done, and I believed it was scientific, and if photography is an art it is based on the laws of science, and if it is based on the laws of science it is invariable and we can find the laws. I could not find any laws, and I said to myself, "I cannot take a picture until I know I will take a good picture. I do not know anything about photography; practically nothing, absolutely nothing. There is nobody in this society but who can give me the most rudimentary instructions, but I will know something about it. I am determined about that. I know if I take the time I can make as good a picture as anybody else, but I might spoil three or four boxes of plates in getting a picture, but that does not make any difference, I get the picture all the same." And one of the principal reasons that has urged me to try to arrive at some conclusion in obtaining a proper exposure was this: That if I should by guess-work go out and get a beautiful picture, and my friend should come to me and say, "that is beautiful," I would say, "Yes, it is beautiful," and he would say, "How I would like to have you come out to Charlie's and take my beautiful lawn, and make me another beautiful picture like that." I would have to say to him, "My dear sir, it is beautiful, but it is all guess work, I do not know how I did it, but I got it." (Laughter.)

Mr. WILLIAMS—The criticism that I make on this paper is, that I do not know how to apply the principle which you have brought out to any practical outdoor work. I have no interest in copying black letters on white paper. The subjects that I take with my camera are, we will say, like that print over there (pointing), with the cows under the trees. Now one of those cows is a white one, and some are dappled, and the white cow is fully exposed, and the red cow is not fully exposed. The difficulty in that picture I suppose is over-exposure. It is generally so in all pictures. I would like to know how it is proposed to apply that to a landscape, or subject which has objects in the shadow and objects in the sunlight? I would like to know how it is going to help the artist or the photographer to judge what exposure is necessary to get the proper graduation of lights, and how to bring out the details and shadows successfully, and in that way make an harmonious picture.

In my practice, and I do not claim to be proficient, the only way I can do that is in the developer.

Mr. NEWTON—There is another objection that has been alluded to.

Now in using that paper, if you have three or four different lenses (I generally take 5, 6, 8, 10, 12, and 14-inch focus) and I make a picture with a 6 inch lens and I use another lens of 12 or 13 focal length, of course I have got to give a longer exposure to the same object, and so your test would not apply to both in a case of that kind. While you use different focal lengths you increase the exposure by the focal length of the lens you are using. I hardly ever, if I am going out to make a dozen pictures, make them all with the same lens, and expose according to what I think right.

Now to illustrate. On Election Day I went upon the Bronx River, and the ordinary exposure with a 6-inch wide focal tube was two seconds with the smallest stop and with the sun pretty well on my back; and then I turned around and made a picture down the river, instead of up, and I gave seven or eight seconds where the shadows were heavy; and the last one I took, which was directly against the sun (which was shining against my tube unless I shielded it) I gave thirteen seconds, and while I was looking the other way two seconds would have been plenty; and none of my pictures were over-exposed and none of them under-exposed. I made good negatives of all of them. The thirteen-second exposure was as good as the two-second exposure, although one was a longer lens than the other.

I will say just a word more while I am talking (but I have not said anything yet) in reference to the action of light upon the sensitive film, and the theories that have been supposed to account for the phenomena in the main, that actinism was a property of light resident in all waves of light. That was not Becquerel's theory. But latterly that has been adopted with the exception of one chemist, who several years ago promulgated the theory that actinism had nothing to do with it; that it was purely mechanical. And those who recollect his theory, and the experiments that were made will recollect that he proved to his own satisfaction the correctness of that theory; they were long and extended and very ingenious. He claimed that the force of the light impinged on the sensitive film made the image, and that chemical actinism had nothing to do with it.

Now the other theory is that it is actinism and that it is resident in the light. In regard to that, in some experiments we have seen lately, in some theatres, in reference to coloring the film so as to photograph colored objects where you transpose all of that, you introduce a red screen under certain conditions and you get more actinism on reds and the greens and the yellows than you do on the violet and blue. Now where are you coming out? Where are you going to land? If that is so, the old theories in reference to the actinism being mainly in the violet seems to be on a weak foundation.

Now light acts differently on different things; that is in reference to mineral salts. You know, most of you, I suppose, that Professor Draper, as long ago as from 1843 to 1846, by a long series of experiments showed that the yellow light had more actinism in it than the violet one, which acted on vegetable fluids, and right the other way when on mineral salts.

Mr. ATKINSON—*Mr. Chairman:* I will ask you, if you will allow me, if you mean by "jugglery" a thorough knowledge of the developer?

The *President*—That is not my expression. Ask Dr. Piffard; he knows. (Laughter.)

Mr. ATKINSON—It seems to me that the whole question resolves itself into this: That if you take an over exposed plate, a man with a thorough knowledge of the art, with proper use of the developer can accomplish something; but with an under-exposed plate the picture is not there, and no amount of knowledge of development will produce it.

The *President*—You can find a gentleman in this room that will dispute that proposition; he maintains that an under-exposed plate can be made as good as a plate that has been over-exposed.

Mr. ATKINSON—That is dodging the question. If the plate has been under-exposed can it be made as good a negative as if it had been over-exposed?

Dr. PIFFARD then stated in substance that Mr. Ripley said earlier in the evening that a plate can be exposed sixty seconds longer than it ought to be exposed and then be made to produce a good picture.

Mr. FRISBIE—*Mr. President:* Dr. Piffard hardly seems to arrive at the question. He assumes there that a one second exposure would have been a normal exposure sufficient to give you a good negative with well judged developing, and the sixty seconds' exposure, which would in some cases be an over-exposure, that you would get a good negative even at that great length of time. But the question is: Can you get a good negative from an under-exposed plate, or one that has been very slightly exposed to the action of the light? I should say, no, because the light has not had an opportunity to act upon the plate at all. It has been virtually in the dark in some parts of it In the high lights you might be able to get a well developed negative, but in the dark shadows you get nothing, no matter what chemicals, or strength of chemicals, you use.

Lieutenant BRUNS—*Mr. Chairmau*, I want to answer two questions in regard to the sensitized paper. Of course all my remarks are purely theoretical, as I have said before, because I have no practical knowledge of photography. I never took an outside picture in my life, and I do not know how to develop, but I premise my statement that I have some knowledge, theoretically, of photography.

A gentleman here this evening has remarked something about taking an outside exposure in which he includes distant as well as near objects. He finds fault with the sensitive paper because it does not correct the condition that is universally recognized, that distance as a general rule does naturally over-expose, and nearness under-expose; but that should not fall to the lot of the poor sensitive paper. It is a condition that happens anyhow. It is a condition that has got to be contended with in some other way. It has got nothing to do with determining the time of exposure, and I believe Mr. Newton made some pertinent remarks in reference to the difference in the focal length of lenses. It is true you could not determine a constant where you would introduce a new condition under which that constant was determined. We determine a series of constants with certain lenses, and, if necessary, with a certain number of lenses, but if you wish to change it, your constants are to be determined for each particular lens. If you use another lens, No. 2 for instance, you have to give that more exposure than lens No. 1. So that you have to do the same with sensitized paper; the only difference is that the Morrison lens is two and one-half times faster than the other lens. If you have got a Waterbury lens, that is ten times as slow as the Ross lens. That is so, but we are trying to determine some absolute condition. I doubt very much if it will ever be of any great utility in photography, but it has availed me. I cannot look at the ground glass and tell anything about the exposure.

Mr. RIPLEY—*Mr. President:* A great deal has been said on this subject since the reading of the two papers; and I have remarked that photography as a science is largely tentative. The most that we know of a certainty in regard to photography, and the action of the light on the chemicals has been found out tentatively—that is by experiment—so that when I called this method of determining the time exposure non-scientific, I mean that the action of light on chloride and bromide and other salts does not act in the same way. It depends on the condition that that salt is in, and I call the method unscientific, and, judging of your deductions from the same standpoint that we judge of what has been found out in photography, and the remark of Lieutenant Bruns that it is non-scientific, inasmuch as he has confessed that it is pure theory, corroborates my own view. And the remarks that have been made here in regard to the latitude of exposure which we have in the practicing of our calling, and the manipulation of the developer, and other means, and the cases that have been here cited, all show the latitude to be so tremendous, that it clearly and distinctly and tentatively shows the idea to be useless and not worth the trouble that it entails to put it into practice. I think that sums it up in rather a small nut-shell.

The *President*—Notwithstanding all that the gentleman has said, and I have great regard for his views, I cannot see why—if I have a brand of Ripley plates of 16-sensitometer, why, having tried one of them, and found by actual exposure that it takes seven seconds to get a good negative in a light where my paper sensitometer requires sixty seconds to actinize—why I have not got a good guide to know how to expose the next plate when the light conditions have changed with that same batch of plates. Now do I make myself clearly understood as far as I have gone?

Mr. RIPLEY—What means have you of any such guide?

The *President*—Because if the light has changed, if a cloud has come over the sky, won't my sensitometer be a guide for me?

Mr. RIPLEY—I claim with the latitude which I have in plates, the same experience that would lead you to vary your developer for curing an over- and under-exposure, would lead you to vary your exposure simply by judging of the illumination on the ground glass, and the quality of the light as you have it. It requires less experience to judge of the proper exposure than it does to juggle with your developer.

The *President*—We are not talking about the development of the plate. What do you say about the judgment as to the exposure of the plate? That is the question.

Mr. RIPLEY—At that moment, on the same subject and all the conditions being the same, except possibly the quality of the light, do you mean to take into consideration those conditions?

The *President*—Yes. Take into consideration that it is the same plate, but the light is changed. Now under those circumstances I use my sensitized paper and determine the right exposure.

Mr. RIPLEY—I claim that the light will change so that it will not affect your actinometer when the plate will be affected. I have seen daylight so weak as regards affecting your actinometer, that it would show nothing in a long time, when a bromide plate would be affected very quickly.

The *President*—You don't answer my question.

Mr. RIPLEY—Put your question exactly so that I can answer yes or no to it, Mr. President.

The *President*—Say for instance that one moment the sun is out and the next moment the sun is obscured and I want to take a good picture? I hold my sensitometer out and it takes that paper twice as long. Now what shall I do when the sun is obscured five minutes after I have taken the first picture? Won't my sensitometer be a fair guide for me?

Mr. RIPLEY—No, sir; it will not be a fair guide because it will not give you the indication. It will give you the direction which you may work in, which direction may be or may not be reliable.

Dr. PIFFARD—I suggest that a committee of three be appointed, to consist of Lieutenant Bruns and two other gentlemen, and that they go out and each of them make an exposure under exactly the same conditions—that is to say as regards plate, camera, lens and stop—of the same object, one side of that plate holder being used by Lieutenant Bruns, and the third member of the committee do the focusing, so that Lieutenant Bruns does not see that ground glass, and the other member of the committee can turn the plate holder over, first looking at the ground glass, and he can give the time from his experience, and go through, each of them, half a dozen plates in that way, and let them be brought here and developed either by Lieutenant Bruns or the other man that can give the time, and each pair of plates to be developed from the same dish.

Mr. BEACH—Any standard of developer to be used?

Dr. PIFFARD—It don't make any difference as to the developer.

Lieutenant BRUNS—I don't know as I care to be put to that character of test, but if the Doctor had been generous he would have said: "Well, I don't think it will ever amount to anything, but you can go up with me some time and take a picture with me." The Doctor has been working twelve or fourteen years at it, and I have been at it as many months perhaps; but nevertheless I am going to work at this thing a little bit. The idea in the paper the President has just read may not be worth anything; I don't say it is. I don't say it is a discovery either.

In almost any photographic book you get hold of you can see a common actinometer, very much after the plan that Mr. Newton describes—a little tin box with a strip of albumen paper which you pull out. There is nothing new about that, but I am a novice in this matter and I want to try to get something to aid me besides looking at the ground glass. I might look at the ground glass, it might assist me; but if the Doctor had been generous he would have said, "You come along and take all your paraphernalia with you, but let me look at the ground glass." I will go up with the Doctor, and take a pin-hole stop with me, or some other stop. It don't matter what kind of a stop I use, it would make no difference. I worked with a pin-hole stop today and never used a pin-hole stop in my life, and never saw one as small as the one you showed me, but I used it and made that plate from it, and I think I would take the Doctor off his field a little bit. When the fall comes we will take some plates and bring them here, and I will tell him the conditions under which he is to take his pictures, and he will tell me the conditions I am to take mine.

Dr. PIFFARD—And the result will be very confusing and will not throw any light on the problem before us.

Mr. Atkinson—This has been tried hundreds of times by hundreds of professionals and amateurs in printing carbon prints, where there was money in it, and it has been proved altogether unreliable.

Mr. Newton—It would depend altogether on the conditions you are taking your pictures in. Now I saw a professional photographer trying to make a negative of a bronze figure, which is quite a difficult thing to do, as any one who has ever undertaken to photograph a piece of bronze will understand. Now that paper, in the light he was working, would not have changed perceptibly all day; after he got his focus and put in his stop, which was about five-eighths of an inch, with a 12 or 14-inch lens, I asked him how long he was going to expose it, and he said about a minute and a half, and I said, "You won't get anything," and he said, "How long would you expose it," I said, "Give it five or six minutes," and he gave it ten minutes, and it came out very good.

Now it depends a great deal on what you are photographing. Under my sky-light I have given thirteen minutes to a bronze figure, and not have it over-exposed at that. Now you see your paper business won't work there at all under those conditions. It would not be worth anything.

The *President*—Has anybody anything more to say about it?

Mr. Williams—I would like to know how the ideas which you have suggested in your papers are to be practically applied. In timing a picture there is no trouble in getting your high lights in the sunshine, but the shadow is the trouble. If you don't get detail in a shadow it will be a big black blotch. How is it proposed to apply the actinometer to a case of that kind and give us some help?

The *President*—The idea is put forth as an approximate method of arriving at a more proper exposure by knowing the force of the sunlight. This proposition is not perfect. We have experimented with it, and so far as we have experimented it has worked successfully, and we knew if we brought it up here for discussion that we would be knocked right and left, and we knew in the end there would be a discusssion upon the development of plates, that would be interesting anyhow. We have all, I am sure, been entertained this evening.

It is a mere approximate. Nobody can tell exactly to a second how much exposure to give, and no instrument can be devised be cause of the varying condition of the plates, and the surroundings are such that it would be impossible; but we cannot conceive of any nearer way of arriving at a correct exposure than by ascertaining the exposure by the power of the light, and not guess at it. A man in taking a picture naturally looks up at the light he is going to have, and he makes his exposure. The method suggested certainly gives him a kind of approximate, and a very close one it appears to us; but you, gentlemen, must not expect too much from us. We cannot answer you positively in regard to the matter. We are, as I stated heretofore, humble in our pretensions and you must deal kindly, and do not sit down too hard upon us.

Mr. Eckert—Why can't we have the suggestion of Dr. Piffard carried out? It might give us some information on the questions that have been discussed.

Mr. Beach—I move that the Committee on Dry Plates take this matter up and report at a future meeting.

The motion was then put and carried.

The *President*.—Is there any other business to be brought up before we adjourn? Has anybody anything to suggest?

Mr. Leaming—*Mr. President*, I have a few plates here which I would like to show to the members of the society. They are some lantern slide plates that were developed by daylight. I have frequently developed plates with a little gas turned on, but have never tried it by daylight, and in this instance I used an iron solution. The negatives are not very good. Some of these which I have here were developed by gaslight. [The plates were then passed around.]

The *President*—Do I understand you all those were developed out in the daylight?

Mr. Leaming—No, sir; I put the plate in the developer in the dark room, and I then walked outside to the light.

The *President*—Well, they were developed outside?

Mr. Leaming—Yes.

Mr. Beach—What color was the developer?

Mr. Leaming—It was the oxalate developer.

Mr. Ripley—How old was it?

Mr. Leaming—It was freshly made.

Mr. Beach—What were the proportions of the developer?

Mr. Newton—If it is an acid developer of course it destroyed the sensitiveness of the plate. The alkaline developer increases the sensitiveness.

The *President*—It is safe to say that a plate developed with an acid developer can be developed in the light of day on a mild day.

Mr. FRISBIE—There is one question I would like to ask. I do not know whether any one has ever investigated in that direction or not, and that is: After a plate has been exposed and the light has affected it, whether it is possible to apply any solution to that plate which would make it non-actinic, and yet the plate be taken out in the broad daylight and with some developer cause a deposit of the oxide of silver?

Mr. NEWTON—You can take an ordinary plate and let it lay in the light of your studio a week and make a good negative on it.

Mr. FRISBIE—What I refer to is this: I take my plate and expose it to the action of the light in the camera and then soak it in some solution which will have the property of preventing any further action of light on that plate when it is exposed to daylight again, and yet after that, be able to bring out the image by some developer.

Dr. PIFFARD stated in substance that he had heard of such a thing; that Mr. Roche had shown him some plates which he said were developed in the daylight, and said that he could take a plate and make an exposure on the plate, and would then take it in the dark room and do "something" with it—Mr. Roche didn't tell him what he did with it—and would then take it out in the daylight and develop it.

Mr. NEWTON—I think I saw some of those plates. He would take a plate that had been exposed to the light for a week and put it in a solution of nitric acid and bromide, and gave the proportions, and restore it to its normal condition and make as good a negative on it as though it had not been exposed at all. There is no question about that.

Mr. LEAMING—I have two other plates here that I would like to show. [Passing plates around.]

Mr. BEACH—I would like to state that to-day I had occasion to experiment with some plates and I succeeded in getting pretty fair negatives. One of them I left for a while and covered it up for five minutes perhaps and then returned and rocked the dish, and after washing fixed it. To my surprise I found that the plate had a mottled appearance all over it, and I thought at first it was due to insufficient fixing, and afterwards I thought it was due to the fact that the plate was not rocked sufficiently, because all the other plates were of the same make, and everything was similar. I used the same developer so it must have been due to some such cause as that, and at some of the meetings which we have had here, similar plates were shown. It was claimed that this mottled effect was due to leaving the plate standing in the dish without rocking it.

The *President*—You trace it directly to that?

Mr. BEACH.—Yes, sir; that is what I trace it to. All the other plates that were constantly rocked while the development was going on did not present that appearance.

Mr. ATKINSON.—In speaking of exposed plates, I want to say something about unexposed plates. Say for instance a plate has not been exposed, but suppose you have a plate and you commence developing it and get nothing on that plate, now you want to save it, which is possible by simply washing in a solution of bichromate of potash, and you will find if you do that, the plate will be as sensitive as it ever was.

Mr. BEACH—Don't it retard the sensitiveness?

Mr. ATKINSON—Not a bit.

On motion, the meeting adjourned.

Bibliography.

PRAKTISCHE ANLEITUNG ZUM PHOTOGRAPHIREN BEI MAGNESIUM LICHT. Von J. Gädicke und A. Miethe. Berlin: Robert Oppenheim.

This is a little treatise upon the new method of taking pictures by magnesium light recently introduced by the authors. It contains thirty-three small octavo pages, two prints giving examples of a portrait and a group taken by the method described, and a number of wood-cuts illustrating the method of applying the new source of illumination. Our readers are already acquainted with this method of taking negatives by artificial light through the German letters of our esteemed correspondent, Dr. H. W. Vogel, of Berlin. To those of our readers who contemplate working with this method we would say that the treatise before us gives information upon the following phases of the subject: A section is devoted to the history of the method of using magnesium light and the groundwork of the new proceedings. In the practical part we have a description of the magnesium mixture and its mode of preparation; the means of igniting or exploding the mixture; the lantern or glass closet in which the mixture is exploded is described; the kind of plate used to explode the mixture upon, when large groups are taken; the reflector; the damper or screen to diffuse the light; the arrangement of the light in regard to the sitter; examples of timing different kinds of negatives; the development of the negative; and concluding remarks. This gives an idea of the ground covered by this eminently practical little treatise, and we can strongly recommend it to our German readers. One word of warning to those who may contemplate using the magnesium mixture mentioned in the book under review. It is what is technically called a percussion powder, that is, it readily explodes by a blow with a hard substance or by friction. Every mixture of this character containing potassium chlorate is readily exploded by friction; a well known example of such a mixture being the common parlor-match. Therefore each ingredient should be carefully powdered *separately from the rest*, and only mixed afterwards upon a piece of paper just before use, and with special care to avoid friction or percussion.

LA PHOTOGRAPHIE SANS OBJECTIF. Par R. Colson. Paris: Gauthier-Villars.

In about fifty small octavo pages the author gives a description of the origin and development of the method of taking pictures without a lens. It begins with the camera obscura and images formed by small openings, and makes a comparison with those formed by a lens, then takes up the practical application of small openings to the production of photographic negatives, and discusses the size and form of the openings. The application of the method to panoramic views is also described, as well as its use in topographic work; while, finally, the production of stereoscopic views is described. The volume is illustrated with a view of the "Dome des Invalides," taken through an aperture of $\frac{3}{10}$ of a millimeter, with an exposure of 20 seconds. There are also diagrams illustrating the principles discussed. Altogether this is an interesting addition to the valuable list of the "bibliothéque photographique" of Messrs. Gauthier-Villars.

TRAITÉ PRATIQUE DE GRAVURE ET IMPRESSION SUR ZINC. Par Geymet. Paris: Gauthier-Villars.

This is another of those excellent manuals published by the well-known house of Gauthier-Villars. It consists of two volumes octavo, containing in all about 240 pages. The first volume treats of the preparation of the zinc, and the engraving of it by means of photography. It describes the kinds of negatives most suitable for the work, also the application of films or *pellicules*. A section is devoted to the use of the electric light, and another to the reversal of the negatives. A very complete discussion of the properties of the zinc used forms another chapter, and the chemicals used in the engraving are also fully described. A chapter is given to the arrangement of the studio for this particular kind of work; while several are devoted to the character, weight, natural grain and the graining, together with the final preparation of the zinc sheets for the photographic impression. A large number of formulas are given for both wet and dry plate work suited to photo-zincography.

In the second volume the methods of making the photographic impressions are described, giving the mode of producing a grain from film or with sand, also grain from resin in the engraving of copper. Chapters are also given upon the methods of using different varieties of paper, also upon the application of bitumen to the engraving process; and finally two valuable chapters upon chromo-zincography in half tones and in relief.

It is very difficult to give an idea of the comprehensive character of this valuable treatise. It appears filled with hints and practical suggestions from an author who is evidently master of his subject and knows how to impart his knowledge to others. Those of our readers who understand the French language, and are interested in photo-mechanical processes, should certainly possess this capital book upon the subject.

We have before us a new edition of Stoddard's well-known guide to the Adirondacks and also a fine map of this district published by him. We need not say more about them, as anything with Mr. Stoddard's name to it is always well done. If any of our readers contemplate a trip into the New York wilderness they cannot do better than get this map and the new edition of the guide just issued by our good friend S. R. Stoddard, the well-known photographer of Glens Falls. For years we have known of these works and they are thoronghly reliable. A noticeable feature in the map is its extension at the northeast to take in a section of Lake Champlain, showing the American Canoe Association Camp on Bow and Arrow Point, with concentric distance circles, the new Chateaugay Railroad, important stage routes, etc.

Views Caught with the Drop Shutter.

MESSRS. SMITH & PATTISON, of Chicago, send us a quite extensive list of "new things, bargains, etc.," which we recommend those who are looking for cheap apparatus, accessories, etc., to send for. MESSRS. SMITH &

PATTISON are at 145 Wabash avenue, Chicago.

WE note in the St. Joseph, Mo., papers, that Elliott L. Cook, the former manager at MR. T. F. INDERMILL'S, has deserted his wife and two children, and had it not been for Mr. Indermill's generosity they would have been in distress, he kindly supplying them with money to return to the wife's home in Philadelphia. A pretty waitress is said to have been the cause of the trouble.

WE regret to note the death of MRS. LETTICE FELLOWS, the wife of Mr. Charles T. Fellows, of Philadelphia, and extend to the bereaved husband our sincere sympathy.

MR. ODIN R. FRITZ having returned from South America, has opened a studio in Boston, Mass. We wish him success.

MR. T. J. ARNOLD, together with H. J. Elper, of Saratoga Springs, has purchased the business of E. A. Record, the well-known photographer of Saratoga Springs. The new firm, to be known as Arnold & Elper, will take possession immediately.

MR. J. S. WOOLEY, who has been in the employ of Mr. Arnold, of Saratoga, for the past three years, has purchased the business, and has already taken possession. Mr. Wooley is an experienced photographer, having been employed by the most reputable firms in New York and Saratoga Springs.

IN Omaha papers we note the death of FRANK F. CURRIER, a well-known photographer of that section. He was found in an unconscious condition with a bottle of morphine in his possession, from the effects of an overdose of which he is supposed to have died.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—C. A. N. incloses prints and writes: I send you some sample prints like which I have four or five dozen. I fixed in the usual manner and this is the way they come out next morning after drying. I would like your advice in the next BULLETIN. My idea is that they are not thoroughly fixed and washed. If you can give me a sure cure for blisters please advise me; I have tried everything and to no purpose. I use the best paper.

A.—The great trouble with your prints is that they have remained in contact with one another too long in the fixing and washing trays. They should be constantly separated, and *also protected from light while fixing*, a precaution not generally taken. The yellow spots on the prints look very much like iron rust in the water; look into this matter, and, if necessary, allow the water to settle before using it, pouring off the clear portion only. Some of the prints have silver stains from dirty fingers after handling sensitized paper. Altogether we think you must use more care in keeping your apparatus and hands clean if you wish good clean results. Few persons realize how *very* clean everything must be in photographic work to insure success. The best thing to prevent blisters is to add salt to the fixing bath, or use a separate bath of salt for the purpose.

Q.—E. BROS. writes: Will you please inform us, through the BULLETIN, how large a sky-light and side-light is best to put in a room 18 x 24, and which is the best way to cut it in? What is the proper distance to put a standing figure from the background to obtain the best results?

A.—1. In a room such as you describe, we should put a sky-light 12 foot long and 12 foot wide, placing it midway between the two ends, thus leaving 6 feet at each end to work under. The side-light should start 18 inches from the floor and then rise five feet. From this point the top-light should rise toward the peak of the roof (say) 12 feet, at an angle of 45 degrees. 2. We cannot give you any rule for placing the subject in front of the background, everything depends upon individual taste and judgment.

Q.—C. W. F. writes: Will you be kind enough to name some book, through the BULLETIN, which treats on how to light the subject under the sky-light? If so you will confer a favor.

A.—Read Wilson's "Quarter Century of Photography" or his "Photographics," they both contain excellent chapters on the subject you inquire about.

Q.—C. J. S. writes: Please inform me, through the BULLETIN, where I can obtain magnesium powder, chlorate of potassium and sulphide of antimony and the cost of each;

also the amount to be used in making an instantaneous picture on a Stanley plate, of a group of three or four people?

A.—The materials you mention can be obtained from Messrs. Eimer & Amend, 18th street and Third avenue, New York City. Be careful how you use them, and read what is said under "Bibliography" in speaking of Gädicke & Miethe's book on this subject, at the end of the notice. For quantity and method of using, read Dr. Vogel's letter from Germany in this issue of the BULLETIN.

Q.—W. G. S., Jr. writes: Will you kindly answer the following questions through the BULLETIN. 1. Is there any way of taking pictures from the mount by which you can save either the print or the card-board as you wish. If so, what is it? 2. Is No. 25 of Cramer's plates as sensitive as No. 25 of Carbutt's or Stanley's. If not, what is equal to Stanley "lightning" No. 25? 3. What size camera do you consider as (taken all in all) the best for an amateur? 4. What is the rate of postage on photographs from here to England? 5. Am I right in saying that the authorities in England (or here either) can open a package of photographs between here and England, and put a duty on them? 6. Which would an amateur rather have, or rather, which would be the better for him to have, a Morrison C lens or a Morrison wide angle instantaneous? 7. Which is the quicker a Morrison C or a wide angle instantaneous? I thank you for so kindly answering my other questions.

A.—There is no safe way of removing pictures from mounts without injuring both the mount and picture. The sensitometer numbers upon the boxes of plates are not readily comparable with one another, because it is seldom that two sensitometers agree as to their numbering; but each manufacturer's numbers are relatively correct, that is, 25 is more sensitive than 20, and so on. In the case of comparing plates of different manufacturers, the only way to do is to use them in the same sensitometer and with a constant source of light, which latter it is almost impossible to obtain. In regard to camera, the size that is most generally useful is 5 x 8. The postal rates on photographs from the United States to England is one cent for each two ounces or fraction thereof. All matter sent at this rate is subject to inspection both here and in England. If you wish the package to remain unopened you must pay letter postage, which is five cents for every half ounce. A wide angle lens is not generally useful, and we should not advise you to buy one unless you need it for special work. We do not know about the rapidity of Morrison lenses, having never used them.

Q.—H. B. writes: Please tell me how I can make a photograph of a person dressed in white with a black background. I never saw one, but have heard of them. I have an idea about this, but have not had time to experiment upon it.

A.—We see no difficulty about taking a negative in the manner you state. All that is necessary is a careful adjustment of the light, especially the side illumination.

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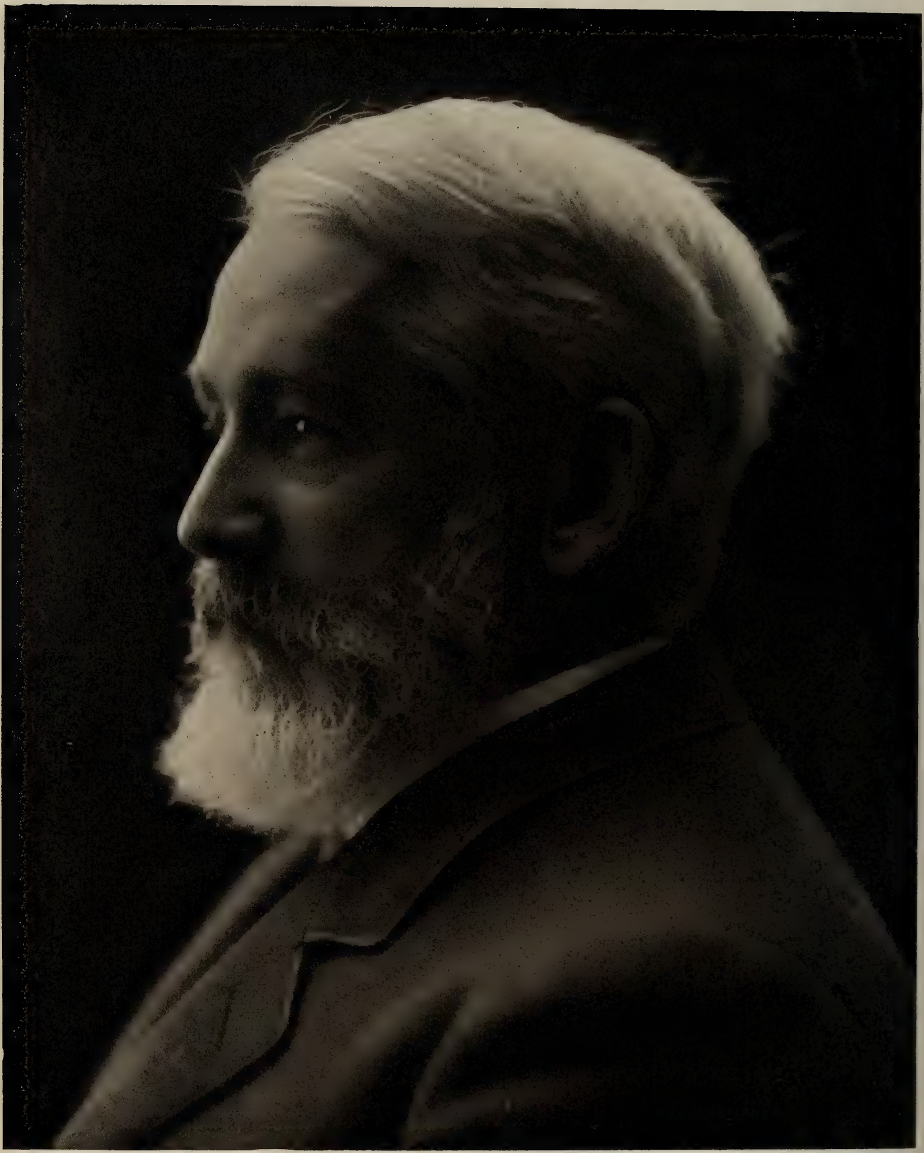

Photogravure Co. N. Y.

EDWARD ATKINSON.

NEGATIVE FROM LIFE BY PARKINSON, NEW YORK.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

AUGUST 27, 1887. Vol. XVIII.—No. 16.

THE CHICAGO CONVENTION, AND AFTER.

THE great annual assembling of the photographers of America has taken place and the various members have now returned to their daily round of labors. That the Convention was a success is beyond question. In numbers it exceeded any previous meeting of the association, there being over eight hundred and seventy members registered on the Treasurer's books. This also means a success from a financial point of view, as the greater number of members in attendance the more certain it is that the necessary expenses will be paid and a surplus remain for the next meeting.

In the art galleries the display of pictures was fully up to those of St. Louis and Buffalo, and, owing to the rules about frames and glass, there was less display and a better chance to see true photographic work than on any previous occasion. But there is yet room for further improvement in the regulation of this interesting feature of the conventions. A rule should be adopted limiting the number of larger pictures in the same manner that the number of cabinets was limited this year. It appears to us that if twenty-four cabinets are sufficient to show a man's ability in that line of work, then for sizes above cabinets and below and including 8 x 10 pictures, twelve pictures should be sufficient; while for sizes above 8 x 10, six pictures might be the limit for competition. By following some such rule as this, and making the members concentrate their efforts on a few pictures, we should raise the quality of the work exhibited at the annual conventions, while the reduction in quantity would be a saving of expense to the photographer in transportation and in the cost of space in the art galleries. Furthermore, we believe that if the number is limited to a few pictures, many more photographers would exhibit who are now deterred from their inability to make a large display.

We hear that there is some dissatisfaction expressed at the awards of the prizes. This is always so, from the prizes awarded at the school and college commencements to the distribution of offices by the State and Federal governments. Unfortunately the number of prizes was relatively small, while the number of competitors (over one hundred and twenty) was large. But no fault should be found with the decisions of the judges, for their fitness for their positions was submitted to the Convention in open session, and they were unanimously accepted as the final arbiters of the relative merits of the various competitors. And no one doubts their honesty of purpose in their decisions. Having

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unanimously accepted them as judges their decisions were final, and it is now useless to discuss their capacities for the work.

The arrangements made by the Local and General Secretaries in the building were of the most complete kind; but, unfortunately, possession of the building was obtained so late that the wisdom of these arrangements could not be appreciated until the Convention was almost through its sessions. Nevertheless, the evident desire to please all, exhibited by both the Secretaries, is worthy of the highest praise. It is no easy task to manage such a heterogeneous mass of humanity, and the strain on a man's nerves cannot be realized unless you have been in a similar position yourself.

In the department devoted to the exhibit of apparatus the arrangements seemed admirable, and the interest displayed by the various manufacturers was a very marked feature of this Convention. There was apparent everywhere a desire to interest the photographer in all the various examples of inventive genius that tend to facilitate his work and give him a higher standing in his art.

We now come to the business sessions of the Convention, and here we are very much disappointed at the results. As we stated a year ago, we are satisfied that it is a great mistake to attempt to carry on the business sessions of the conventions in the day-time. The attractions of the art galleries and the exhibition of apparatus are too interesting to forego for the sake of listening to the reading of a paper, during which the punctuation is emphasized by the tack-hammer of some exhibitor hanging his pictures; or the reader's voice is drowned in the din of a carpenter's blows erecting a screen. One evening was devoted to the reading of papers and to some discussions, and both in the attendance and the interest manifested by those present, was a great success. Since this is now demonstrated, why would it not be better to have all the business meetings in the evening during the entire convention. This would leave the days free to see the pictures and study them, and also give an opportunity for the more careful examination of new apparatus and accessories. Again, many members are strangers in the cities where the convention meets, and like to see the various attractions and enjoy a drive or a walk through the principal streets, parks, etc. Under the present arrangement of morning sessions this is out of the question, as these sessions are often prolonged into the afternoon and it is too late to make a tour of the city. In the evening many of the members are strolling around from hotel to hotel, when they would rather attend a meeting and get some information that would help them in their daily work. We hope the Executive Committee will arrange next year to have evening sessions for the business of the association and the reading of papers and discussions. In this way we are satisfied that the attendance would be better and the business of the association be dispatched with greater facility than by the present plan.

Another evening was devoted to a musical and social reception under the auspices of the Chicago members. This was a very delightful affair. The music was very finely rendered, the dramatic part of the programme excellent, and the generous supplies of good things to eat and drink spoke well for the kind hearts of our Chicago brethren. An unique part of the entertainment was the performance of Mr. Dixon, the Toronto photographer, walking across the Exposition Building on a tight rope; it was certainly very well done.

This social and entertaining feature of our conventions should be more encouraged. It should not be left entirely to the efforts of the local members in the cities we visit, but some action should be taken by the Executive Committee to arrange for some entertainment for the members during the sessions of the conventions. One evening, or one afternoon, devoted to something of a purely social or entertaining character would be time well spent and help to bring members of the association into more friendly relations with one another.

As we expected, we met a large number of the friends of the BULLETIN and enjoyed once more their kindly greetings. Our office was very pleasantly located in front of the entrance, and our register bears the autographs of nearly all the members who were at Chicago.

Altogether the meeting at Chicago shows that photography grows and more of her devotees are yearly coming into this national association. Next year the convention is to meet in Minneapolis, and we believe our brethren there will make the meeting a success. Those of them that were at Chicago certainly gave us a very warm invitation. Let us hope we shall all meet there and that our art will be still further advanced by the year's progress that will then be recorded.

EDITORIAL NOTES.

THE American Association for the Advancement of Science met at Columbia College, New York, August 10th to 16th, and the meeting was a decided success. It was feared that New York would not give the scientists a fitting welcome; but there is no doubt now that in every respect the visiting members will never regret that the sessions of 1887 were held in this city. Over seven hundred members were in attendance, and about three hundred new members were elected from this city and vicinity.

PROFESSOR CHANDLER, who is now traveling in Europe, writes us from England that he has seen the photographs in color made by the "Cellerier Syndicate." He says, "They were very cordial and showed me everything. They make no secret of the process, and do not claim that the color is produced by light." The steps in the process are as follows: 1, a silver negative as usual; 2, a gelatine carbon print attached to a pane of glass by its face; 3, a sheet of paper colored by hand to suit the object, with only a few dashes of color skillfully applied, is damped, and the glass bearing the gelatine carbon print is placed over it in proper position. A little pressure causes it to adhere, and when the paper is dry it is readily detached from the glass with the color and gelatine print." Professor Chandler adds: "The pictures have a fine surface and are really very handsome. The Syndicate has a fine suite of rooms and is very busy doing portrait work by this process, some of the pictures being nearly two feet square. The pictures look as though they had been colored and then glazed, but the effects are really finer than in ordinary colored photographs, as the color is toned and shaded by the gelatine print above it."

WE have recently received from Mr. Hector Kraus, the photographer, of Harrisburg, Pa., three cabinet prints of some of his first experiments with the new magnesium mixture noted in our letters from Germany. These pictures are a portrait and two groups, and are superior to those we received from Dr. Vogel as examples of what has been accomplished in Europe. In both the groups no attempt to use accessories has been made, and the pictures show the interior of an ordinary room where a lady and child are playing ball and a gentleman is reading. The results show that the exposures were instantaneous, and Mr. Kraus tells us that he used Stanley plates. He says that he has had such success with this new method of procedure that he has made it a feature in his work in the studio, and likes it better than the electric light, with which he has had uncommonly good results. It is difficult to believe that the prints before us were not taken by daylight, but a very slight lack of detail in the shadows reveals the use of artificial light. We must congratulate Mr. Kraus on his success, and shall be glad to see more of his work when he has had more experience with the new light, and has completed his improved arrangements for its use.

We regret to note the death of Alvin Clark, the renowned telescope maker, at Cambridge, Mass., on August 19th last. He began making lenses as a diversion after he was forty years old, and has had a world-wide reputation for forty years, dying at the good old age of 87. His son, a member of the firm Alvin Clark & Son, is presumed to be as competent as his father in the art of making lenses, having worked almost daily at his father's side for many years.

In a recent communication from Shanghai, China, we are informed that a number of Chinese and foreign amateur and professional photographers are about to organize a photographic society there. We are glad to hear this news, and note it as one of the best evidences of the advent of liberal ideas in the Celestial Empire. We hope to hear more of the doings of this new society, and to record its contributions to the progress of our art.

Our New York friends, and those near the city, must not forget the Annual Field Day and Dinner of the united Photographic Societies of New York. There is no doubt, weather permitting, that this will be a grand outing, as every precaution will be taken to make the day's pleasure a success. The tickets are now ready and can be obtained from our publishers, or of one of the members of the committee. A full notice of the arrangements as to time, etc., will be found on another page of this issue of the Bulletin. We are glad to be able to invite the ladies to join us on that excursion, and hope the weather will be such that some fine pictures can be taken.

The next Convention of the Photographers' Association of America will be held at Minneapolis, Minn., with the following officers: *President*, E. Decker, of Cleveland, O.; *First Vice-President*, C. W. Motes, of Atlanta, Ga.; *Second Vice-President*, F. W. Guerin, of St. Louis, Mo.; *Treasurer*, G. M. Carlisle, of Providence, R. I.; *Secretary*, W. H. Potter, of Indianapolis, Ind. These gentlemen will constitute the Executive Committee for 1888, and a goodly company they are.

A SEARCH FOR A SUBSTITUTE FOR HYPO.

BY ARTHUR H ELLIOTT, PH.D., F.C.S.

(*Continued.*)

Having tried these experiments upon silver bromide, it was natural that the iodide also should receive some attention. Using the same quantity of silver solution, but precipitating it with potassium iodide in the same careful manner to avoid an excess of the alkaline haloid, washing and draining, there was obtained for each experiment 0.5725 gram (8.835 grains) of silver iodide.

Starting with the usual hyposulphite solution (1 in 6), it required 78 cubic centimeters ($2\frac{3}{4}$ ounces) of it to give complete solution of the silver iodide (0.5725 gram). Hence one part of silver iodide requires 22.7 parts of hyposulphite for solution in a bath of 1 in 6.

Another bath of hyposulphite, twice as strong as that given above, was now tried, and it required 37 cubic centimeters ($1\frac{1}{3}$ ounces) of it to give a solution of the same quantity of silver iodide. Therefore one part of silver iodide requires 21.5 parts of hyposulphite for solution in a bath of 1 in 3. It would therefore appear that there is no economy in hyposulphite used in strong solutions when silver iodide is considered.

As in the case of silver bromide, ammonia solution has no perceptible solvent action upon silver iodide. However, a bath was made containing one-sixth hyposulphite and 4.87 per cent. of ammonia, and this was used as a solvent for the silver iodide. It required 67 cubic centimeters ($2\frac{1}{3}$ ounces) of this solution to dissolve 0.5725 gram (8.835 grains) of silver iodide. Then one part of silver iodide requires 19.4 parts of hyposulphite for solution in a bath of 1 in 6 containing 4.87 per cent. of ammonia. Here is a slight gain (about eleven per cent.) in the use of ammonia, and although not so great as in the case of silver bromide, yet under some circumstances it may be of advantage.

Ammonium acetate in a solution containing 30 per cent. of the salt, and slightly alkaline with ammonia, had no appreciable solvent action upon silver iodide. But when ammonium acetate is used in a solution containing one-sixth of hyposulphite and 15 per cent. of the acetate (slightly alkaline with ammonia), it required 68 cubic centimeters (about $2\frac{1}{3}$ ounces) of the mixture to dissolve the above mentioned quantity of silver bromide (0.5725 gram= 8.835 grains). This is practically the same result as that obtained by the addition of ammonia to the hyposulphite.

The effect of other admixtures with the hyposulphite was also tried with negative results. In some cases the mixing of another salt with the hyposulphite actually decreases the solvent power of the latter. Calcium acetate was tried as a solvent, both alone and mixed with hyposulphite. Alone, in a solution of 23 per cent., calcium acetate has no perceptible solvent action upon silver iodide. Mixed with hyposulphite solution so that the mixture contained one-sixth hyposulphite and $11\frac{1}{2}$ per cent. of calcium acetate, it decreased the solvent power of the hyposulphite so that it required more than 30 parts of sodium hyposulphite (in a bath 1 in 6) to dissolve one part of silver iodide. The same is equally true if sodium acetate is used; this also retards the action of the hyposulphite. A mixture of sal ammoniac (ammonium chloride) and sodium hyposulphite acts in about the same manner, although not so badly, solution being obtained, but very slowly. Ammonium carbonate, when mixed with hyposulphite, also decreased the solvent action of the salt upon silver iodide, requiring about thirty parts of sodium hyposulphite to every part of the silver haloid.

Two other compounds were tried upon silver iodide, for this appears to be the most insoluble of all the silver compounds with which the photographer has to deal, and it would be a great boom if some better solvent than hyposulphite of sodium could be found for it. A solution of sodium sulphite was made containing 1 part of the salt in 4 of water; but it had no perceptible solvent action upon silver iodide, even with the addition of a little ammonia.

Ammonium sulphite in a solution containing 1 part of the salt in 3 of water, had no apparent solvent action upon silver iodide, addition of ammonia making no change. But on adding a solution of sodium hyposulphite (1 in 3) complete solution was obtained after adding 50 cubic centimeters, the mixture already containing fifty cubic centimeters of the ammonium sulphite solution. It requires therefore about thirty parts of hyposulphite in a solution 1 in 6, with about sixteen per cent. of ammonium sulphite, to dissolve one part of silver iodide.

There are a few practical results that can be drawn from these imperfect and incomplete experiments upon the solubility of silver haloids. In the first place there is the determination of the fact (already known in a general way) that silver iodide requires 7.8 times more hyposulphite for its solution than silver bromide in a bath of 1 in 6. Second, addition of ammonia to the fixing bath increases the solvent action of the hyposulphite so that nearly twice as much silver bromide and eleven per cent. more silver iodide are dissolved than when ammonia is absent. Third, that the addition of certain salts to the fixing bath decreases the solvent action of the hyposulphite independently of dilution. Fourth, that the action of the different salts in the fixing bath is materially different with the two haloids.

How the various additions to the hyposulphite act when applied to the fixing of plates and prints I have not yet been able to determine, but hope to do so in the future. The question up to the present time has been: Is there anything we can use, either wholly or in part, as a substitute for sodium hyposulphite? At present there is nothing so harmless and so cheap as this now almost universally used sodium salt; but the many drawbacks to its use lead me to believe that something better may be found by diligent searching. And it would appear that some such experiments as these I have briefly reviewed are steps in the right direction. At some future time I hope to have the honor of presenting to this association a continuation and amplification of the results here noted, and hope that others will be found able and willing to work in the same field.

This then is a kind of report of progress in a line of experimental work that has engaged my attention during spare hours in the past year. I know it is very incomplete; I know there is little that is practical in it at present; but I am satisfied that work of this kind is needed in photography. There is room for a hundred workers upon this and allied questions in photographic science, and if I shall have interested but one of you to take up some work of this kind, I shall be fully repaid for the time I have taken to bring before you this imperfect report upon a series of experiments that have given me great pleasure in prosecuting.

THE AWARDS OF PRIZES AT CHICAGO.

Instructions to Judges.

The Awarding Committee shall examine the entry lists and see that the rules concerning competitors in Class C are carried out, excluding them from competition in other classes.

Each judge shall separately make his examination of the competing exhibits, and decide upon the merits of the same, giving in each class No. 10 to the best, No. 9 to the second best, and so on according to the number of medals offered.

The Awarding Committee shall have a special meeting before the Thursday morning session, and combine reports, and come to a final conclusion by striking an average. Awards shall be made accordingly.

As all medals of one grade shall be of equal value, only the awards shall be reported in alphabetical order, and the number of points received shall not be published.

Prizes for Exhibits from Foreign Countries.

For best exhibit of portrait photography from foreign countries.—One gold medal.

For best foreign exhibit of landscape or marine views.—One silver medal.

Prizes for Exhibits of Members of the Photographers' Association of America, Residents of the United States and Canada.

Class A.—For collection of portrait photographs of any size. (Cabinet pictures not competing for Class C may be included in exhibits competing in this class.)

One grand prize, diamond badge, for the best exhibit.
Four gold medals for superiority.
Four silver medals for excellence.

Class B.—For collection of large photographs, contact prints, not less than 22 inches long; print not to be vignetted.

One gold medal for superiority.
One silver medal for excellence.

Class C.—For collection of twenty-four cabinets.

Ten bronze medals for merit.

Parties competing for this class cannot compete in any other class.

Class D.—Composition or genre pictures of any kind.

One gold medal for superiority.
One silver medal for excellence.

Class E.—Landscapes.

One diamond badge for best exhibit.
One gold medal for superiority.
One silver medal for excellence.

Class F.—Best marine views.

One silver medal.

Class G.—Best interiors.

One silver medal.

Class H.—Best instantaneous views.

One silver medal.

Class I.—Best architectural photography.

One silver medal.

Class J.—Best photographic transparencies.

One silver medal.

Class K.—Photography applied to science.

One silver medal.

The grand prize in Classes A and E is open to all members of the Photographers' Association of America.

Winners of gold medals at the Convention of 1886 are eligible only to the grand prizes in A and E this year. Winners of silver medals at the Convention of 1886 are eligible only for gold medals and the grand prize this year.

Parties competing for the bronze medals of merit in Class C are debarred from competition in any other class.

AWARDS.

Class A.—Portrait photography: F. W. Guerin, St. Louis, one diamond badge; H. McMichael, Buffalo, G. M. Elton, Palmyra, N. Y., J. M. Appleton, Dayton, Ohio, W. H. Potter, Indianapolis, each one gold medal; S. A. Stein, Milwaukee, J. C. Strauss, St. Louis, O. P. Scott, Chicago, S. V. Courtney, Canton, Ohio, each one silver medal.

Class B.—For collection of large photographs, contact prints, not vignetted: S. V. Courtney, Canton, Ohio, one gold medal; P. H. Rose, Providence, R. I., one silver medal.

Class C.—For collection of two dozen cabinets, one bronze medal to each of the following: C. C. Urlin, Columbus, Ohio; G. L. Temple, Clinton, Iowa; J. J. Gibson, Ann Arbor, Mich.; George W. Wise, Zanesville, Ohio; L. E. Miller, Alliance, Ohio; B. La Marsh, Kenosha, Wis.; Stuber Brothers, Louisville, Ky.; H. M. Waide, Quincy, Ill.; C. Poole, St. Catharines, Ont.; Palethorpe, Greenville, Mich.

Class D.—Composition or genre pictures of any kind: G. B. Wood, Philadelphia, one gold medal; H. Randall, Ann Arbor, Mich., one silver medal.

Class E.—Landscapes: George Barker, Niagara Falls, N.Y., one diamond badge; S. W. Burnham, Chicago, Ill., one gold medal; P. B. Green, Chicago, Ill., one silver medal.

Class F.—Best marine views: J. S. Johnson, New York, silver medal.

Class G.—Best interior views: H. G. Peabody, Boston, silver medal.

Class H.—Best instantaneous views: H. G. Peabody, Boston, silver medal.

Class I.—Best architectural photography: C. D. Arnold, Brooklyn, silver medal.

Class J.—Best photographic transparencies: No competition.

Class K.—Photography applied to science: Henry D. Tolman, silver medal.

Foreign exhibit.—Oscar Suck, Karlsruhe, Germany, gold medal; D. Anderson, Rome, Italy, silver medal.

The Blair cup for the best picture in the exhibition to James Landy, of Cincinnati.

Judges.—Dr. John Nicol, Dr. A. H. Elliott, James Inglis, R. Goebel, E. Long.

GELATINO-BROMIDE PAPER AS A BASIS FOR FINISHED WORK.

BY G. H. CROUGHTON.

[Presented at the Chicago Convention.]

AFTER some introductory remarks the author proceeds as follows:

CRAYON FINISHING.

As crayon is the most popular material, I will commence with that. The materials wanted are Conte crayon sauce No. 1 and 3, Conte crayon ordinary, and No. 0 and 1 superfine in wood, three or four leather stumps of various sizes, one dozen paper stippling stumps, a stick of ordinary office ink eraser, and two rubber stumps, soft and medium, some pumice-stone very finely powdered, and a quantity of carded cotton.

The print to be worked should be printed fully out, that is it should have every gradation from high light to deepest shadow, and should look a little darker than wanted for a plain print. It should be mounted upon a muslin covered stretcher, as the best effects cannot be obtained if the print is mounted upon card-board. Great care should be taken that no starch gets upon the face of the print during mounting.

Material for Stumping.—Take one stick of the Conte crayon sauce and crush it finely; two sticks of No. 1 Conte crayon must be finely powdered by rubbing them upon glass or sand paper No. 1, and be intimately mixed with the Conte sauce.

Place the print flat upon a table. Have a piece of card-board by the side of the print. Take a tuft of cotton and dip it into the mixture and rub it upon the card-board to spread and equalize it, then transfer it to the background of the print, rubbing gently with a circular movement right up and over the edges of both face and figure. Do not be afraid of spoiling your print as it is easily taken off with the rubber. In putting in your background, see that the darkest part is kept low just over the shoulders, and bring the shaded side of the background up to the lighted side of the face, which should contrast with the shaded side of the face and figure, while a bold shadow should be put in just over the shoulder to balance and represent the cast shadow. When you have got in your background roughly, put aside your cotton and straighten out the three longest fingers on the right hand and rub lightly all over. This is the most important part of the background. The fingers must feel the crayon roll evenly under them, and if they do not, but catch the paper instead, there is not enough No. 1 Conte in the mixture and more must be added till a gritty feeling is obtained, then go ahead, rubbing all over the background with a circular movement, taking no trouble to keep off the face or any other part of the picture. If you wish to darken any part, rub the tips of the fingers with the same mixture and transfer the crayon taken up on to the part of the print which needs it and rub it in. An even tint can be rubbed all over a black coat or other dark drapery in this manner, shadows deepened, and the hair strengthened. In fact all that is usually done by the chamois skin upon solar prints can be done with the fingers upon the bromide paper. Now take a large piece of clean cotton and after knocking the superfluous crayon off the picture rub evenly all over. This will considerably lighten all the crayon, but, if not light enough, or there are any inequalities in the background, dust a little pumice powder evenly all over and go over it all again with the finger, using more pumice powder whenever you wish to lighten, but being careful not to use too much, as an excessive use of pumice powder will rub down and flatten the grain of the paper. If these directions have been carefully followed, the background will show a beautiful grain or stipple, so like a hand stipple that it has puzzled experts to detect the means adopted for producing it. This grain can be varied by the method of handling. With a light rub a large open grain can be obtained, and the heavier the rubbing the smaller the grain will be. Now rub again with clean cotton and place the picture upon an easel. With an ink eraser clean the edges of the background and blend with the cotton. At this stage any amount of artistic effect can be put in and taken out of the background. The stump can be used to hatch in broad effects and the ink eraser to take out lights, etc. This part of the work it is impossible to describe. Individual taste and experience are the only guides, and the beginner had better not attempt too much in that line till experience has given him confidence.

Having thus far gotten your background in order, we will proceed with the figure. Begin to clean up the face with the rubber stump, taking out the high lights upon forehead, cheek-bones and chin, and blend with a small tuft of cotton. In some cases this handy little tool may be made more effective by dipping it just before use into the powdered pumice; thus, by the use of the rubber stump and cotton blender the modeling of the face can be worked out, and the beginner will now be surprised to find how much lighter the face appears, in fact it lacks decision, which we will now proceed to put in. Take one of the stippling stumps and, rubbing it in the sauce before described, mark in the pupils of the eyes, the lines of the eyelash, the shadows under the eyebrows, the brows themselves, the nostrils, and the shadows under the chin, blending all with cotton. Next deepen the shadows of hair and drapery with one of the leather stumps, blending also with cotton or the fingers, now on the deepest shadows of the drapery and everywhere where decisive touches are wanted. Mark in strongly with Conte No. 3 crayon and blend with the fingers. Do not touch these shadows with the cotton or you will destroy their firmness. When you have got thus far you will be surprised what an effect you have obtained with little labor, and now any amount of finish can be obtained by working with the point of crayons No. 1 and 0. The filling in of the face is best accomplished with No. 0, and should be done in the same manner as retouching a negative, filling in and softening breaks or inequalities in the gradations. The No. 1 is useful in rounding and marking the eyes, eyebrows, hair, etc. White drapery should never be touched with white crayon. Any amount of light can be taken out by the hardest rubber and dark shadows can be lightened with it. Great effect can be obtained by first covering the white drapery with a light tint of crayon sauce rubbed evenly all over with cotton and the lights taken out with the soft rubber. Lace can be made out in this manner with great effect, and with far better harmony than can be obtained by the use of white chalk which gives a metallic effect, and for that reason should only be used upon the high lights of jewelry, etc. But, as a rule, the less white chalk used the better.

Retouching or Mending.

There is another method of finishing bromide prints which may prove acceptable to those photographers who do not want them finished in crayon, but yet want some kind of finishing or retouching to improve the plain prints which can be done simply and cheaply by the usual help in the studio. The spotting or mending the white spots upon bromide prints can be done with India ink to which has been added just enough Payne's gray to neutralize the brownish tint of the ink. With this the pupils of the eyes, the line of the lash, the eyebrows, and in fact every shadow can be deepened, taking care not to lay the color on too thick at first. It is better to get the effects by repeated washes than to get them at once, as you are likely to get harsh edges if the color is laid on too deeply. Having in this way got in your strength, mend the face and fill in any breaks in the gradations with a Faber retouching pencil. If the picture is a vignette, and the blending should be uneven or too abrupt, you can correct that by rubbing upon the parts to be blended pure graphite or plumbago in this manner. You can buy the graphite or plumbago (it is known by both names) at any artist's material store. It is sold in bars or short sticks, something like India ink; or, failing that, go into the kitchen and levy contribution upon your wife's stove polish. Take a tuft of cotton and rub upon the bar or cake of graphite till it is well covered and shiny, then gently rub upon the part to be filled up. This matches both in surface and color the bromide print. Shadows in white drapery can be deepened and a tint put all over it so that high lights can be taken out with the rubber just as I have before described in the crayon work.

Another dodge for improving the shadows of a bromide print is to rub over them a solution of wax in benzine and polish with a brisk rub with Canton flannel. To be more definite, take 1½ ounces of bleached bees-wax, cut it into small pieces and put into a bottle with eight ounces of benzine. When the wax is dissolved, apply the mixture to the shadows with a piece of rag, and after the benzine has evaporated rub briskly over the part with Canton flannel till it shines. You will be astonished at the result. The buried details scarcely seen will show themselves clear and distinct, and the shadows will be deepened and made more transparent. This can also be applied all over the print and gives a surface with a slight gloss, bringing out details and making the print fifty per cent. more brilliant without the objectionable gloss which you see on a varnished print.

Finishing in Water Color.

Of course in a paper like this I would not begin to give anything like an exhaustive set of directions for color finishing, so these remarks must be directed to those who know something about finishing in colors upon other surfaces. You will notice that in the two first methods of finishing I say nothing about preparing the surface of the paper, simply because there is no preparation required. For water colors the surface must be prepared by hardening the gelatine surface with alum. Without this hardening the surface is too receptive, the color being held when the brush just touches, and any attempt to blend or soften will result in pulling up the print from the surface of the paper; but after the application of the alum you can do anything with it. You can wash in or wash out, and even take out lights with water and rubbing with a cloth without raising the surface. The alum solution is 1 ounce powdered alum to 20 ounces of water. This is swabbed over the surface of the mounted print and left to dry, when it is ready for working upon.

Good effects upon vignetted prints can be obtained with very little expenditure of time by rubbing the background with colored pastel, the half hard kind, to which has been added just enough powdered pumice-stone to make the mixture feel gritty. Proceed exactly as described for crayon. You can rub one color over the other and so get effects of combined tints which are very pleasing. I set my palette for flesh painting with pink madder, vermilion, yellow ochre, cobalt blue, and the various browns for hair, etc. I just put a flat wash all over the flesh of a tint made by combining the pink madder with yellow ochre in different quantities according to the complexion, a dark complexion needing more yellow and a fair one more of the pink. Having put in my flesh washes, I next proceed to wash over the shadows with light washes of vermilion to kill the black of the prints. Next put in the carnations on the cheeks and lips; after this the face must be finished by hatching and stippling, the edges of all shadows being stippled with gray composed of cobalt and yellow ochre, the blue predominating on the forehead and upper part of the face, and the yellow on the lower part. All the usual methods of working water colors upon drawing paper or on any other photographic surface can be used on bromide paper after it has been prepared with the alum solution.

Pastel.

There is no preparation of the surface needed for pastel. It takes hold of the surface as well as any other paper and can be worked by any of the usual methods. I like a good vigorous print with clean lights, and half tints and shadows not too black. I first lay in my dead coloring with soft French pastel, covering the photograph with the flesh tints as near as possible with the proper strengths, lightening up the shadows with vermilion and yellow, then hatching with half hard and finishing with hard Swiss crayons. An effect of great finish is obtained by this method.

Oil.

For painting in oil upon a paper print, a sizing must be used to prevent the oil in the colors getting into and staining the paper, which it will do in spite of the gelatine. The sizing solution is 10 grains of gelatine to 1 ounce of water, brushed evenly over the print with a broad camel's hair brush. As with pastel so with oil. I prefer a good clear strong print, and work somewhat in the same manner, viz., from the shadows to the lights, painting over the photographic shadow with warm transparent colors and using opaque colors on lights, half lights and reflexes, finishing with solid color on the high lights and cool grays on the edges of the shadows.

ADVERTISING AND PRICES.

BY C. GENTILÉ.

[Read before the Chicago Convention.]

DOUBTLESS others will have many papers treating on the theory and practice of the various processes worked in the daily avocations of the photographer. In this case it will be well to let us consider for a few minutes a subject that is uppermost in the minds of many, even if we are unable to remedy the evils that photographers are suffering from. But I am convinced that many among you will go home disappointed if this subject is not broached. There are some who say it is absolutely useless to touch it; that it is treading on dangerous ground; that it is an evil that must work its own remedy; that every one has a right to carry on his business as he pleases; and that, notwithstanding anything that may be said here, no reform can be made practical that will be adopted that can benefit the craft. I wish to suggest that at least an effort can be made in this direction. No reforms have ever been accomplished without overcoming frequently insurmountable and formidable obstacles. Let us see if we cannot find a Gladstone and a Parnell to aid us; or, perhaps, in the minds of many, a severe coercion act would be more applicable in our case, as being more effective to aid us in voting out the pests that are a curse to our beautiful calling. There is no country in the world where competition is keener than among the photographers of the United States, nor is there a country on the face of the earth where the effects of cut-throat prices and cheap-Johnism have been more seriously felt by the members of the profession.

To many here this subject is of great import. From the advertisements of photographers inserted in the Chicago daily papers, the business of photographers for hundreds of miles around is affected and that most seriously. In no other country nor in any other city are to be read such disgraceful and unprofessional advertisements as are to be found most frequently in our leading newpapers, and especially on Sunday. It is a disgrace to our leading journals to allow their columns, for the sake of a few dollars, to be used to abuse members of a reputable profession, as is frequently done right in this city. You cannot find a member of any other profession but the photographic who delights in publicly degrading and insulting his competitors. Sometimes the attacks are of such a personal character that in many European and South American countries the proprietors of the pewspaper, as well as the advertiser, would be held responsible and justly chastised or "called out" and made to account for his actions; but in this free and enlightened country the cowardly and base advertiser who has a few dollars to throw away can at will hold up the followers of the same profession in which he makes a living to the ridicule of the public. If we want the public to respect our calling we must respect ourselves. Of late this mania for large and vulgar advertisements is spreading, and there is no knowing where and when it will end. The majority of our successful photographers advertise very little in the daily papers, and, if at all, generally a neat and respectful advertisement without any allusion to their competitors. Other professional men rarely make any reference to one another. It would not matter so much to the whole fraternity what an individual might occasionally say about another in the same business, but the dire effects of advertising cut-throat prices is felt throughout the neighboring States that are adjacent to a city like Chicago, whose papers are sent out in thousands on the morning trains.

The disgustingly illustrated advertisements of some photographers cannot help but attract the attention of the unthinking. The members of this association might pass certain resolutions as to what they consider professional etiquette as regards advertising, but it is to be feared it would have no effect on the photographers who were endeavoring to drag into the mire the whole profession.

I consider this matter of advertising, and the serious question of prices, should be brought up for discussion at least. It would be well, on an occasion like this, to let the public know that photographs are being made by some at prices that lead only to ruin and degradation of the man who makes them, and that the man who respects himself sufficiently to obtain higher and remunerative prices is the artist who is looked up to and, in the long run, patronized by those who have been disgusted with the work done by the majority of those who give their professional services for little or nothing. The great difficulty in grappling with this question is that portraits made at low rates are much too good for the money, and we are reluctantly compelled to acknowledge that they satisfy a certain class of people who do not go into the artistic merits of a photograph. To them a print from any negative is a portrait. One remedy, as proposed by Mr. Scotford, could be made a success if the majority of the members of this association would take hold of it, subscribe sufficient working capital, and provided practical business men were given the management of it. Perhaps it will be well to explain in as few words as possible that Mr. Scotford's idea was that a joint stock company should be formed by photographers, they owning all stock. When any photographer in any town or city undertakes to make a cut, the company steps in and rents a gallery of a member and aids him to meet the cut, or they erect one themselves and run it until the man who started the cut gets sick of it and agrees to abide by an established rate. My object in bringing this subject before you is not to propose a remedy myself, but with the view that by calling your attention to it, some among you might suggest a manner of alleviating the suffering of those who are unfortunate in having small galleries and unremunerative business, owing principally to the cut-throat propensities of a few who do not care what becomes of his neighbor.

It is well known that many will use the hackneyed phrase with regard to this price question, "What are you going to do about it?" My answer will be: "Let us tackle it and wrestle with it, for if it is left alone it will drag on for years." It would be well for the fraternity to do away with the pernicious system of giving chromos and life-size portraits with every dozen cabinets.

It does seem strange that there should be less unity among the photographic profession with regard to a scale of prices than in almost any other calling. The hod-carrier, carpenter, and even the boot-black do not cut prices like photographers. There should be more unity among those who work in photographic studios. If assistants were banded together they would get better wages and could better their condition. To avoid a waste of time in discussion on the subject of prices, it might be well to appoint a committee of three proprietors of galleries to make an investigation and report, if possible before the close of this Convention, on the price question.

PRETENDED PHOTOGRAPHY IN NATURAL COLORS.

BY W. E. DEBENHAM.

[Read before the British Photographic Convention at Glasgow.*]

A SUBJECT which occurs to me as being one with which the Photographers' Convention may properly deal, is that of processes for coloring photographs put forward as discoveries in photography. Every few years such pretensions have been advanced, commonly in connection with some old, abandoned, and re-patented methods of applying paint; but recent occurrences demand, I think, that something more than passing notice should be taken of such pretensions, and the publicity which the proceedings of the Convention enjoy may, I think, properly be used to help to inform the public of the truth in the matter. Not only do photographers suffer in public esteem by their inability to produce nature-colored photographs, which, by means of bold advertisements and untruthful paragraphs in some even of the leading newspapers, the public have been led to suppose are now accomplished by So-and-So's wonderful discovery; but when the time comes for these false pretensions to be exposed, the public, disgusted with having been taken in, is apt to regard photography itself as being associated with unworthy proceedings.

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* From advance sheets from Mr. J. Traill Taylor.

I was consulted some time since (probably from one to two years ago) by a gentleman who had had some connection with public companies, as to his taking an interest in a process which had been introduced to him as one of photography in natural colors. He sent me the specification, and when I next saw him I told him what the process was, and gave him my opinion that to bring it out as proposed would be grossly fraudulent. It did not appear to me that any one possessing any knowledge of photography would suppose that it had any value on its own merits, or that money could be made by it in any other way than by using it as an instrument of obtaining money by a false pretense. Independent of any want of novelty, the conditions of the process—backing up a transparency with a sheet of painted paper—appeared to me to hamper the artist to such an extent, from the difficulty of judging of the effect which his work on a plain tracing would produce when viewed through the transparency in optical contact with it, and from the difficulty in preventing stretching of the tracing and insuring accuracy of register under the squeegee, that I considered that he would be hopelessly handicapped compared with those who painted photographs either in the usual way or behind the image, as in the Crystoleum and Lambert processes. Indeed I should not be at all surprised to learn that the Cellerier Company have adopted the latter means (painting directly upon the back of the film) in place of that with which they started.

After the exposure in the photographic papers of the fictitious character of the Cellerier claim to the title, "Photography in Natural Colors," their representative wrote that "the Board gave instructions to withdraw and discontinue any such heading to their processes (Cellerier and Parkes), as they do not wish to adopt any name of a possibly misleading or deceptive character." After this it is disappointing to any one who expected the Board to act up to this profession, to find that the title substituted for "Photography in Colors" is "Photographs in Colors," which is very much "such a title," and is certainly misleading. To my mind the only difference in the meaning of the expressions is, that one describes a process, and the other the pictures produced by that process; but both imply that the colors, equally with the drawing, are the work of nature, and not of the hand. On this point, however, as the question has been raised, I should like the opinion of the Convention whether it confirms that which I hold, and which I have found to be that of the public, or not.

Another process which has been recently announced as photography in colors is that of Mayall. In the *Globe* of May 17th, in a paragraph headed, "New Discovery in Photography," it is said that Mr. Mayall "has discovered a means of photographing in colors." "The new camera does its work in colors almost instantaneously, and what rich and delicate coloring it produces!" Now it transpires that Mayall's is a hand-coloring process, and there certainly is no comparison between the credit due to the originator of any coloring process (assuming it to be original) and the honor to which such a discovery as that heralded in the *Globe* would have entitled its inventor. It is therefore to be regretted, that in a letter of Mr. Mayall's which appeared in the *Globe* a few days later, he did not distinctly disclaim the pretensions put forward in his behalf, but wrote in such a manner concerning wave lengths (quite irrelevant in a painting process) as would induce many non-scientific people to believe the claim to be genuine.

The writer in the *Globe* may have been misled by Mr. Mayall's heading: "My New Process for Producing Highly-finished Colored Photographs Without the Aid of an Artist." A person who applies paint to a photograph is certainly a painter, even if a bad one; and with regard to coloring photographs, the words painter and artist are used and understood synonymously. If the words "without the aid of a painter" had been used in Mayall's heading there would have been a direct and obvious misstatement, which some might prefer, as bolder, to the suggestion implied by the words, "without the aid of an artist." Now, although "artist" is, as has been said, understood with regard to photographic coloring to be synonymous with "painter," and so it may be said that a photographic colorist must be an artist, even if a very bad one, whilst he exercises the art of coloring photographs, yet he may do them so slightly or so badly that it may be argued that in one sense he cannot be called an artist. I have not seen Mr. Mayall's colored productions, but I understand that a gentleman attending your Convention (Mr. J. Traill Taylor) has an example which is to be shown, and you may be able to judge whether the colorist is entitled, in the sense of ability, to be considered an artist or not.

What is to be said of the conduct of some of the leading newspapers in such matters? If a patch of granite without a grain of noble metal in it is to be offered to the public as a rich auriferous deposit, the papers will not so far lend themselves to the transaction as to call it a great discovery, and speak on their own authority of the purity and abundance of the gold there found. Why should they be so much less scrupulous when photographic matters are in question? Whether there is the smallest justification for the praises that have been lavished upon the beauty of the results of any particular coloring process, may be judged by those who have seen them. There certainly is none for statements that the colors are the work of nature; and it cannot be supposed that writers who do not scruple to make such statements will hesitate to add flattering descriptions as to beauty, especially as the last named quality may, after all, be said to exist only in opinion; and a writer might even maintain that he considered that to be beautiful which in the eyes of most people would be considered vulgar, trashy, dingy, false, or gaudy. Are the untrue statements that have appeared due to false information derived from those likely to profit by them, or are they due to the incapacity or venality of the writers? This is a question which it appears to me the proprietors of the newspapers in which such puffs have appeared should, for their own honor and interest, investigate, and to which they should give some sort of reply, at the same time that they insert a withdrawal of the puffs as publicly as they have made them.

It is certainly possible for a journal to guard itself against being made the instrument for propagating untruthful puffs in scientific or pseudo-scientific matters. This is proved by the fact that they cannot, so far as my observation goes, be got into the *Standard*. I don't suppose that this journal is quite alone amongst leading newspapers in being clean-handed in this respect. Perhaps it is in the knowledge of some of the members of the Convention which leading papers have, and which have not, lent themselves to the misstatements referred to. If the present discussion should induce some of the offending or misled journals to make the *amende* suggested, and cause them to be more careful in the future, it will not have been in vain.

CAREY LEA'S PHOTOCHLORIDE OF SILVER.

BY WILLIAM LANG, JR.

[Read before the British Photographic Convention at Glasgow.*]

THE alchemists of old had their philosopher's stone and elixir of life, and many, indeed, were the attempts made by those early pioneers of chemical science to wrest from nature what they considered would be of untold benefit to mankind. I take it, gentlemen, that if anything in our art is, or can be considered as analagous to the philosopher's stone of the alchemist, we will find it in that branch of photography which has received the name of heliochromy. Photgraphy in natural colors would indeed be a grand achievement, but the question is: Are we any nearer its accomplishment than we were in 1848, when Becquerel laid before the French Academy of Science his silver plate imprinted with the colors of the spectrum? I think the position of affairs at the moment is this: If silver chloride is to be the medium by which a transcript of the colors as we see them in nature is to be arrived at, we should very soon now be able to say definitely whether the thing be a possibility or not. As you are aware, there have been many workers in this field. It will be sufficient to recall to you the names of Nièpce de St. Victor and Poitevin, of Herschel, Hunt, and Abney.

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* From advance sheets from Mr. J. Traill Taylor.

Becquerel's work we have already alluded to. One would have thought that by this time all the changes that were possible had been rung as far as production of color from silver chloride was concerned, but that such is not the case is remarkably evident from the contribution to photographic science that has lately been made by Carey Lea. In the May number of the *American Journal of Science*, the first of a series of papers made its appearance, having for its title, "On Red and Purple Chloride, Bromide, and Iodide of Silver; on Heliochromy, and on the Latent Photographic Image," and it is some of the facts brought forward by the American experimentalist, not only in the May, but also in the June number of the *American Journal of Science*, that we purpose laying before the members of the Convention this evening. Carey Lea's memoirs are so full of suggestive material that in a communication such as the present, one or two points can only be touched upon. Those interested in the chemistry of photography will recognize at once the importance of the researches that have been carried out. The whole contribution is remarkable for its originality, and it takes its place at once in the first rank of the many classical researches which from time to time have enriched photographic science. Carey Lea's views regarding the latent image may or may not be ultimately accepted by those competent to form an opinion, but the fact remains that his experiments will form the starting point for further investigations. It is no small matter for the experimentalist to be able to produce in the laboratory and in quantity that colored form of silver chloride which hitherto has only been obtained, and that in what might be termed infinitesimal quantity, on the surface of silver chloride by the agency of light. To the colored substance thus produced Carey Lea has given the name of photochloride, and specimens I beg herewith to put forward for your inspection. It is worthy of notice that this photochloride can be obtained by a great number of methods. For these we must refer those interested to the original paper. It will be sufficient for the present to indicate that particular process by which the specimens now before you have been obtained. Freshly precipitated silver chloride after washing was dissolved in ammonia, and to this a solution of ferrous sulphate was added, producing an intensely black precipitate. Dilute sulphuric acid was afterwards added till a slightly acid reaction was manifest. Thereafter the precipitate was well washed by decantation and boiled with dilute nitric acid, washing was again resorted to, and the product treated with dilute hydrochloric acid, boiled, and finally washed. I show specimens of the substance both in the moist and dry state. I have also prepared the corresponding photosalts obtained from the bromide and iodide of silver, thinking that they would not be without interest, and here are the specimens of photoiodide and photobromide in question. Their mode of preparation is somewhat similar to the method employed in the case of photochloride, but here again we must refer members for particulars to the original communication reproduced in our own two leading photographic journals.

To come back to the consideration of the photochloride, the question naturally arises: What is it? Its discoverer describes it as a combination of silver chloride with its own subsalt; but one extraordinary thing connected with it is that no two specimens, although to all intents and purposes prepared in the same way, show the same percentage of subchloride to that of the normal chloride. The amount of the former substance, combined with the latter, seems to vary from half per cent. to something like nine per cent. To quote Carey Lea's own words: "Even when silver chloride, bromide, or iodide contains as little as one-half of one per cent. of subsalt combined, its properties are greatly changed. It has a strong coloration, and its behavior to light is altered. Even a much less quantity, one inappreciable to analysis, is capable of affecting both the color and the behavior to light."

It seems to me that much experimental work will have to be done before a clue to these variations will be satisfactorily obtained. To enumerate all the reactions of this phenomenal compound would simply weary you; one striking characteristic may perhaps be alluded to, and that is for its being able to resist for a considerable lengthened period the action of boiling aqua regia. Referring to the colors assumed by this protean substance, Carey Lea specifies that it "shows all the warm shades from white to black through the following gradations: white, pale flesh color, pale pink, rose color, copper color, red-purple, dark chocolate, black."

Another point that will require elucidation before the complete identity of the chloride, colored by the agency of light, and the photochloride produced in the laboratory be established, and that is: Is oxygen present in the latter substance? Carey Lea says nothing in his memoir that would indicate the presence of oxygen. Dr. Hodgkinson's experiments demonstrate what other experimentalists previously had inferred, that in colored chloride produced by light, oxygen is invariably present. I feel sure we will not have long to wait before an answer will be given to the question here raised.

I think it would be doing Carey Lea great injustice were I not to allude to a discovery he has made, and which is embodied in his memoir, namely, that he is able to affect a film containing a silver haloid by application of a chemical reagent, that he can produce a result equivalent to the latent image formed by the agency of light. The body which gives the result in the most pronounced manner is sodium hypophosphite. It virtually, according to Carey Lea, converts the haloid into a photo compound, producing no visible change, but when a developing agent is applied the action is rendered manifest.

At the conclusion of the article which appeared in the May number of the American journal already referred to, we find Carey Lea making use of the following language: "I am persuaded that in the reactions which have been here described lies the future of heliochromy, and that in some form or other this beautiful red chloride is destined to lead eventually to the reproduction of natural colors." Now, gentlemen, does this language seem too extravagant? For my own part I do not think so. The impossibilities of one age become the veriest possibilities of the next. I do not think that even were we able to depict the colors of nature on the photographic tablet that that accomplishment would transcend in value the fact that we are able now in the merest fraction of a second to record the most rapidly moving object that can be presented to our cameras. At the commencement of my paper I drew, as it were, a parallel between the alchemist of the past and the photographer of the present; permit me to continue it, and should it ultimately be found that a research, such as Carey Lea's, does not lead up to the philosopher's stone of the photographer, does not render possible the reproduction of the colors of nature, still the work he has done will be of lasting value to those interested in the chemistry of the silver haloids. Brewster, many years ago in his letters on Natural Magic, wrote as follows, and I think that what he then said regarding alchemy will show that what after all may turn out to be a dream is not without its beneficial result: "Though the philosopher's stone has not been found, chemistry has derived rich accessions from its search; though the general solvent has not been obtained, yet the diamond and the gems have surrendered to science their adamantine strength, and though the elixir of life has never been distilled, yet other substances have soothed 'the ills that flesh is heir to,' and prolonged in no slight degree the average term of our existence."

THE STANLEY PRIZE AT CHICAGO.

The cash prize of one hundred dollars offered by the Stanley Dry Plate Company for the best pictures made on their plates was awarded to Mr. H. McMichael, of Buffalo, N. Y. The judges were Dr. John Nicol, of Chicago; S. V. Courtney, Canton, Ohio; and C. W. Motes, Atlanta, Ga.

We would also remark that these pictures obtained a gold medal from the association prizes. Another gold medal was obtained by G. M. Elton, of Palmyra, N. Y., also for pictures on the Stanley plates; and a silver medal was won by O. P. Scott, of Chicago, whose exhibit was likewise on these dry plates. Altogether we must congratulate the Stanley Company upon their success.

ANNUAL FIELD DAY AND DINNER OF THE PHOTOGRAPHIC SOCIETIES OF NEW YORK.

There will be an excursion under the auspices of the Photographic Section of the American Institute and the Society of Amateur Photographers of New York on Saturday, September 3d. The commodious steamer Blackbird has been engaged, and will leave foot of Franklin street, North River, at 9.30 A.M. sharp, cruising around the waters of New York until 1 P.M., when she will land at the foot of 31st street, East River, for the accommodation of those unable to start in the morning, and will then proceed to Glen Island, where a dinner will be provided.

Tickets, $2 each, including dinner; ladies' tickets, $1; can be procured at the American Institute, Clinton Hall, 8th street; the Society of Amateur Photographers, 122 West 36th street; Scovill Manufacturing Co., 423 Broome street; Anthony & Co., 591 Broadway; or of the undersigned committee:

J. B. Gardiner,
Dr. O. G. Mason,
Dr. A. H. Elliott,
G. R. Allerton,
J. H. Wainright,
Edward Leaming.

* * *

OUR SNOWSCAPE ILLUSTRATION.

[The following letter reached us after our departure for Chicago, hence the delay.—Eds.]

To the Editors of the Bulletin.

We take pleasure in sending to you our cold pictures for illustrating the warmest number of the Bulletin.

These studies were made in the vicinity of this truly charming village, Cazenovia, and were taken on the severest days of January, biting and keen (when two great coats, felt boots and extra mittens were only an approach to comfort).

It has been many years since such superb frost-work has visited this part of the State, owing, we believe, to Cazevonia's uncommon location—nestling between the tops of the hills with her sister Lake Owahgena at her foot.

Cazevonia is not far from the geographical center of the State, and is easily approached by rail.

It is only a question of a short time, and near too, when the goodly number that seek its quiet beauty will increase to many times its double.

The village is old, and rich in the picturesque. There is food abundant for lens, pencil and brush.

From our many snow studies we have chosen the seven finest which appear in the Bulletin.

Should any of your readers desire a series of progressive studies in snowscapeture, we shall be pleased to furnish them at a small cost. Not only the amateur, but the professional viewist will find in them valuable points in composition and *chiara oscuro,* aside from chemical effect.

Very truly yours, Marshall Brothers.

* * *

All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

OUR ILLUSTRATION.

The handsome photogravure with which we illustrate this issue of the Bulletin is a picture of that remarkable writer upon social statistics, Mr. Edward Atkinson, of Boston, and was made from a negative by our friend Parkinson, of New York. The fine lighting, the beautifully natural pose, and the excellence of the negative, together with the careful work upon the photogravure, have resulted in giving us an extremely interesting and beautiful illustration. As a portrait study we have not lately seen anything that surpasses it.

THE ANTHONY PRIZE AT CHICAGO.

The prize of one hundred dollars in cash offered by our publishers for the best enlargements on their new bromide paper was awarded to the exhibit having the private mark of a five-pointed star. The judges were W. H. Potter, Indianapolis, Ind.; C. T. Stuart, Hartford, Conn.; and J. C. Haring, Massillon, Ohio.

The owners of the pictures with the above private mark are the Brooklyn Photo-Enlarging and Contact Printing Company, of Brooklyn, N. Y.

My husband must have been one of your earliest subscribers and he prized your Bulletin very highly. It has been a constant visitant to our home ever since our marriage, nineteen years ago, and I should miss it very much. Please send to same address.
Mrs. D. C. Dinsmore.

I like the Bulletin very much and would feel lost without it. I shall continue to take it so long as it keeps up its present standard.

H. B. Wesner.

Your Bulletin has saved me many a dollar. I have received more information through it than any other journal. The last one puts me right in working the bromide paper; better information than I received through ———.

Respectfully,

Chas. E. Wallin.

I cannot think of running a photo gallery without the Bulletin.

W. B. Cook.

I would be lost without the Bulletin. It's a daisy. A. J. Stephens.

It seems like meeting an old friend when I receive it. Could not do without it. Its value cannot be estimated. Long may it thrive. J. H. Crowns.

ANTHONY'S
Photographic Bulletin.
EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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1 Page, per issue ...$15.00. ½ Page, per issue..$8.00
¼ " " " ... 5.00. ⅛ " " " .. 3.00
Discount on six issues .... 10 per Cent.
" " twelve issues.............. 15 "
" " twenty-four issues......... 25 "

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Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

EIGHTH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

HELD IN THE EXPOSITION BUILDING, CHICAGO, ILL., AUGUST 9–12, 1887.

First Day.

THE Convention was called to order by *President* CRAMER at 11.30 A.M.

Mr. C. GENTILÉ, Local Secretary, then introduced Judge Bradwell, of Chicago, as follows:

Mr. President, Ladies and Gentlemen: I have great pleasure in introducing to you a gentleman who has taken great interest in photography. He has been studying it for the last ten years, and he can tell you more about it than a great many of us know. I refer to Judge Bradwell, proprietor of the *Legal News*, of Chicago. He has a gallery in his house. and I am sure that he will give you a very cordial welcome.

Judge BRADWELL—*Mr. President, Ladies and Gentlemen of the Photographers' Association of America:*

We are told that "a word to the wise is sufficient." The one word I propose to say to-day is the word "Welcome." Welcome to our instantaneous dry plates; welcome to our lightning developer; welcome to our city, that was burned down in a night and built up in a day; welcome to the Garden City of the West. And we can assure you that the laboratory of nature never furnished a chemical that was strong enough to produce an idea that should fix, retard, or restrain her development. We thank you for having selected our city as the place in which to hold your Eighth Annual Convention. We think it very appropriate that Chicago should be selected for such a Convention. There is much in common with the history of Chicago and the history of photography. Chicago is only fifty years of age as a city. Photography is less than that. They have both grown and gone on beyond the utmost sanguine expectations of their founders. And Chicago is peculiarly a city of conventions. It was down here in a little wigwam on the crossing of Lake and Market streets that the name of our martyred President Abraham Lincoln was first launched to the world as the standard bearer of the Republican Party. It was in the old Opera House, before the fire, that that glorious commander, and that man of peace as well as of war, General Grant, was first nominated for the presidency. It was here, in this very hall, where your deliberations are to take place, that one of the most memorable contests that ever was waged in any convention since the world begun took place, the contest between Grant and Garfield, and Garfield was nominated for the presidency of the United States.

When I see this grand display of the art that comes from the Sunny South and the Frozen North, from the Golden Pacific to the Far East, and not only every State in the Union and every Territory represented, but exhibits from Canada and Europe, I think of the early history of Chicago. I remember a little dusty hall on Lake street where there was an exhibition of pictures over forty years ago. It was confined exclusively to oil paintings—there were no photographs then. Comparing it with this we wonder. One of the happy events that proceeds from such a Convention as this is that it brings together the people of our whole country, the representatives of every State. And they come here in peace and vie with each other, and see who it is that can produce the best and quickest pictures at the least expense, and all that is necessary to carry on the art.

We welcome you to our almost one hundred miles of beautiful boulevards and to our extensive parks. It is true we have no buildings or monuments upon which the dust of centuries rest, but we have magnificent blocks of buildings for you to look upon. We have a very fine city and a beautiful lake, and let me say to you, if you desire to take a sail upon our renowned and beautiful Chicago River, we can assure you of a nosegay you will never forget to your dying day.

Now let me speak one word for the Press of Chicago. Its daily press is one that is equal to that of any city in the world. There is none that has more energy, or on which more money is expended to develop it, than that of the City of Chicago, and it is one of our institutions that we are justly proud of, and doubtless they will give to the deliberations of your Convention all the space that the importance of the subject requires. Having said that much for the Chicago press, let me say that the entire photographic press of the nation are doing a good work. And I may be permitted in this connection to say, as we are speaking for the City of Chicago, that we have an *Eye* that is single to the good of photography, and although that *Eye* is not always Gentilé, it is very aggressive when photography is assailed. And we have burning very brightly on the mountain top a *Beacon Light*, which is in charge of a son of Old Scotland.

Now I desire to say a word about your art. The gentlemen of the daily press of this city—and not only of this city, but throughout the United States—are interested in your deliberations to a very great extent. Let me tell you what they want. They want a dry plate that shall be fully equal to the wet plate of the past, so to speak, that they can use for reproduction in their papers. But I am well aware that there are half a dozen gentlemen of experience who will spring up in your Convention, in your deliberations, and say to you that that has already been accomplished, and that such plates you have at the present time. But let me say that experience shows that although you have done much in that direction, this association has done much, and the gentlemen who produce them have done much, that has not been accomplished yet. Almost, if not every newspaper in the United States that reproduces from the zinc process, has to use the old wet plate bath. But the art is progressing. No living man can tell what a year, a month or a day may bring forth, when all your mechanical artists of the world are vieing with each other to see who can best, in the shortest possible time, and in the cheapest way produce a negative, reproduce it, transfer it to metal so that it shall run upon a rapid press, and produce a likeness of a man or of a thing so that it will be unnecessary to write a descriptive name under it in order to explain what it is. The press of the country expect—they have faith in you, and faith enough to expect—that before your next meeting you will be able to say you have discovered this desirable thing.

There is no knowing to what extent this art may be extended, and there is no knowing its influence. Not only the ministers, the philosophers, the doctors, professors, the old and gray-haired of the land, but the young have almost universally taken an interest in this art. And let me assure you, as the daily press, and also the photographic journals, record the doings of your experts and your discussions on the various subjects that come before you, they will be read not only in America, but wherever the English language is spoken, and those professors and learned men, as well as those practicing the art, will take them up, discuss them, and cannot fail to profit by your experience for the year. They will try the experiments you suggest, and it is almost impossible to tell the influence that this Convention will have, not only upon the art, but upon the country.

I predict that it will not be long before in all the pulpits in the country the camera will be brought into requisition, and the sermons throughout the land will be illustrated with the magic lantern. How in the world can a minister drive home to the poor backsliding sinner the beauties of salvation and the terrors of damnation better than by illustrations that he can bring before his congregation with the magic lantern? In fact there is one of our ministers—as the press of Sunday last informed us—in one of our suburbs illustrating his sermons that way, and his church is one of the most popular. He can hardly take in the money fast enough when they pass round the hat, and he illustrates the hymns which are sung and it has a very good effect.

Mr. President, Ladies and Gentlemen: I extend to you in the name of the City of Chicago a hearty welcome, and hope that your deliberations may be successful, and that you may accomplish all that you desire.

The *President*—Judge Bradwell: While not a man of many words, and not your equal in oratorical talent, I must express the feelings of the association by saying that we accept with great pleasure your kind and cordial welcome. I have no doubt that we shall have an enjoyable time in this grand and glorious city, which, from the fearful disaster of a few years ago, has risen phœnix-like from the ashes, and in its rapid flight onward is going to eclipse everything, not only in this country, but in the whole world. I know that we shall carry with us most pleasant memories of this our Eighth Annual Convention, wherein we celebrate our birthday, for our association was born here seven years ago. On behalf of the officers and members of this association I thank you for your cordial welcome, and for the kind feelings you express of those whom you represent.

THE PRESIDENT'S ADDRESS.

Ladies and Gentlemen: It is with no small degree of pleasure that I greet you on this, the opening day of our Eighth Annual Convention, and to witness with you the progress photography has made in all its numerous branches.

I note with pride the attendance of so great a number of our craft, and this, more than anything else, encourages me in the belief that our association is destined to grow; that it will be supported by the fraternity in general; and that it is accomplishing the ends sought to be attained by its promoters. In short, that it is proving a grand success. Our association can prove a power for mutual good, and, as united only can we stand, so does it behoove us to stand firmly by our principles, and to work continuously, that all the good we seek for ourselves may come to us as a reward, well done. Since our last convent in St. Louis we have made rapid strides forward. We have become an incorporated society, have increased our membership, are on a cash foundation, and gradually forming into a well regulated and compact body, and it seems to me that Chicago may well feel proud of the child which was born here seven years ago, and was called the "P. A. of A.," and which now returns to visit its birthplace full of vigor and strength.

I am glad to see so many veterans of the craft assembled here, men grown old in the art; men who having made a name and achieved fame come here to mingle with us and to give us the benefit of their knowledge and experience. To the younger members of our association I would say, profit by the teachings of your more advanced and experienced brethren, and also seek new paths in which to achieve success in our beautiful art. Learn to excel, seek to grow in fame and glory, and remember that although the lower ranks are crowded, there is plenty of room above. The future welfare of our association depends mainly upon your efforts. Come to the front and let us all join hands to elevate our art, to promote the welfare and harmony and to further the interests of the P. A. of A. to our mutual advantage.

Let each member appoint himself a committee of one to solicit new members. Go out and visit your competitors, be they of high or low degree, and urge upon them the necessity of joining our body. The benefits to be obtained are worth the trouble, for with all the fraternity as members of our association a great deal of petty jealousy and rancor will disappear, local differences be remedied, and a better personal feeling be developed, and that harmony of action obtained which will materially advance your mutual interest; and, above all, that personal intercourse established which is so necessary to live in peace and harmony with your neighbors.

To every member in attendance, I say it is your duty to assist in the success of this Convention, and to make our proceedings worthy of being recorded in the history of our association. Do not merely criticise or find fault, but work to the best of your ability to add to our success; be ready to impart your knowledge and experience to your colleagues, and do not forget that the association depends upon its members for its present and future success. I hope that you will not return home without having derived benefit from our exhibition and our meetings.

To myself I hope that you will be lenient if I should in any particular show a lack of knowledge of parliamentary rules or in conducting so large an assembly. I accepted office with great reluctance, knowing my weakness on these points, and I depend upon the assistance of the members and the past officers of our association in particular.

You will pardon me if I cannot call by name many whose faces I know, and whom I have had the pleasure of meeting on former occasions, and in order to make it easier for me and the reporters, I would ask that each speaker give his name and State when addressing the chair.

I now declare the Eighth Annual Convention of the Photographers' Association of America open and ready for the regular order of business.

Mr. Ranger, of Syracuse, N. Y., moved that the calling of the roll of members be dispensed with.

The motion was duly seconded and carried.

Mr. RANGER also moved that the reading of the minutes of the last meeting be dispensed with, which motion was seconded and carried.

The *President*—Next in order is the reports of the standing committees. The report of the Executive Committee is in order first. Our ex-President, Mr. Landy, will give it.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee congratulate you upon the prosperous condition of the association. In complying with the custom of a yearly report from the Executive Committee, I will endeavor to use as little of your valuable time as possible.

At the close of the very successful Seventh Annual Convention, held at St. Louis, the following officers were elected to serve for the year, 1887: G. Cramer, President; H. S. Bellsmith, Secretary; G. M. Carlisle, Treasurer; J. Landy and V. Ranger, Executive Committee.

Pursuant to a call from President Cramer, your committee met at the Palmer House, Chicago, January 15th, and remained in session four days. The proceedings of that meeting having been published by the photographic press, you are doubtless familiar with them. We there elected C. Gentilé Local Secretary, with the unanimous approval of the Chicago members. The Committee on Incorporation made their report, and presented a charter granted by and under the Laws of the State of Illinois. The charter was accepted, and the names of Gayton A. Douglass, Charles Gentilé, and E. L. Brand engrossed therein, were continued as trustees until the next annual election of officers. A communication was received from Gayton A. Douglass, resigning as trustee under our charter. Resignation accepted. We thereupon nominated and elected W. H. Potter, of Indianapolis, to fill the vacancy. The books of the association were audited, and some important revisions were made in the Constitution, which will be submitted to you.

It has been the aim of your committee to carry on the affairs of the association on a basis of true principles, as inaugurated by the two previous Executive Committees, and not have the association depend upon charity for subsistence. The association and its conventions are now self-supporting. We have endeavored to elevate our exhibitions of photographs to the true art level, and to that end have passed a resolution excluding everything of an advertising nature from the art department. The extent to which advertising has been carried before in the art department, has been we think, degrading. In order to encourage all classes, and give them an opportunity to compete for prizes, we have arranged a large number of medals for the various branches of photography, and it was resolved that the prizes for exhibits of photographic work should be awarded by a committee of five members of the association appointed by the Executive Committee. In closing, we desire to thank the Chicago photographers for their kindly aid, also the dealers and the photographic press.

The *President*—Next in order will be the report of the Committee on Constitution and By-Laws revision. The committee has done its work so far as I know, and its report will now be in order. The Secretary will please read it. The committee has seen best to make a radical change in the Constitution and By-Laws and present it all in one unity.

REPORT OF THE COMMITTEE ON CONSTITUTION.

PREAMBLE.

Whereas, The advancement of the art of photography and the elevation of the professional character of its professors; the establishment of a higher and more perfect system of conducting the business; the promotion of friendly intercourse and feeling, and a unity of purpose in pursuing the direction that points to the greater success of photography as an art, are dear to us in common with all well-disposed photographers; therefore, we, the members of a Convention now assembled in Chicago (August, 1887), composed of photographers from different sections of the United States, do now adopt the following Constitution.

CONSTITUTION.

ARTICLE I.

This association shall be called THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA. Its aim shall be to unite the photographers of this country in the following objects:

First.—To improve the science and art of photography by diffusing scientific knowledge among its members, fostering photographic literature, stimulating discovery and invention, and encouraging the production and the manufacture of the many articles required for photographic use.

Second.—To discourage and oppose any unjust imposition which tends to hamper the progress of the art.

Third.—To establish the relations between members of the profession and the people at large upon just and business principles, which shall promote the public welfare and be of mutual advantage.

Fourth.—To inaugurate exhibitions of photographic productions on a scale commensurate with the progress of the art.

ARTICLE II.

Membership.

SECTION I. Every photographer of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and also those who may be specially interested in the art, who, after duly considering the objects of the association, and the obligations of its Constitution, are willing to subscribe to them, are eligible to membership.

SEC. 2. Any person who is eligible may become a member of this association by making application to the Treasurer and paying an initiation fee of three dollars, and one year's dues of two dollars, in advance.

SEC. 3. Employees will pay into the treasury as their annual dues the sum of two dollars. No initiation fee shall be required.

SEC. 4. The annual dues become payable in January of each year, and any member failing to pay the same prior to the adjournment of the annual meeting shall forfeit his right to membership, and can only be reinstated on payment of an initiation fee as provided in case of admission of new members.

SEC. 5. Resignation of membership shall be made,in writing, to the Secretary or Treasurer. All resignations shall be acknowledged, in writing, by the officer who receives them, and shall be reported at the next annual meeting.

SEC. 6. Eminent photographers of other countries, inventors, and other scientific men who may be thought worthy of the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office, or to vote at the meeting.

ARTICLE III.

SECTION I. The officers shall consist of a President, a First Vice-President, a Second Vice-President, a Secretary, and a Treasurer, who shall hold office one year from the first day of the January following their election, or until their successors are elected.

SEC. 2. In the case of the temporary absence or inability of the President, his duties shall devolve on one of the Vice-Presidents.

SEC. 3. The Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays and papers received by the association, and shall be charged with the necessary foreign and scientific correspondence. He shall receive ten per cent. of the gross annual receipts as full compensation for his services. Any money collected by the Secretary shall be immediately turned over to the Treasurer, taking his receipt for the same. He shall make an accurate and detailed report of the business of his office in time to be audited at the annual meeting of the Executive Committee.

SEC. 4. The Treasurer shall collect and take charge of the funds of the association. He shall pay no moneys unless by order of the President and Secretary. He shall present a statement of his accounts at each annual meeting of the Executive Committee. The Treasurer shall receive ten per cent. of the gross annual receipts as full compensation for his services.

In case of the absence of the Treasurer, he shall appoint a deputy, with power of attorney, to fulfill his duties. The Treasurer shall be required to give an indemnity bond that shall be deemed sufficient and satisfactory to the members of the Executive Committee, and said bond shall remain in the custody of the President of the association.

ARTICLE IV.

Board of Trustees and Standing Committees.

SECTION I. The Board of Trustees shall consist of the President and the two Vice-Presidents.

SEC. 2. The Executive Committee shall have charge of the general affairs of the association, and shall consist of the President and the two Vice-Presidents, the Secretary and the Treasurer.

SEC. 3. A Committee on the Progress of Photography shall be appointed by the President at the annual meeting of the Executive Committee, to report at the next convention.

ARTICLE V.

The Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereon.

BY-LAWS.

(*Adopted in Chicago, August*, 1887.)

ARTICLE I.

Meetings.

SECTION 1. The annual meeting shall be held at such time and place as may be determined by the association.

SEC. 2. Special meetings of the association may be called by the President, with the advice and consent of the Executive Committee, whenever deemed expedient.

ARTICLE II.

Quorum.

Twenty-five members shall constitute a quorum for the transaction of the business of the association.

ARTICLE III.

Order of Business.

SECTION 1. Calling the meeting to order.

SEC. 2. Calling the roll of members.

SEC. 3. Reading minutes of last meeting.

SEC. 4. Reports of the standing and special committees, which shall be read by their titles or in full.

SEC. 5. Selection of location for next convention.

SEC. 6. A committee to nominate officers for the ensuing year shall be appointed, to report at the opening of the next morning session.

SEC. 7. The election of officers shall be held at the morning session on the day preceding the last day of the annual convention.

SEC. 8. The first session shall close with the reading of the President's annual report, and referring to appropriate committees any portion requiring the attention of such committee.

SEC. 9. After the first session the order of business shall be determined by the nature of the subjects presented, and by the will of the majority.

SEC. 10. All questions, except the election or expulsion of members and election of officers, may be determined by yeas and nays, or by a division if necessary.

SEC. 11. Any motion duly made and seconded shall be proposed by the President, and shall then only be debatable.

SEC. 12. A motion made and seconded shall be open to discussion, and while it is before the association no motion shall be received, unless to amend, divide, commit, to lay on the table, postpone or adjourn, and a motion to adjourn shall be decided without debate.

SEC. 13. Any member who shall desire to speak on any motion or resolution, shall, standing, address the President, and shall confine his remarks to the question at issue; avoid any offensive or personal remarks; and shall not speak more than once, and then not more than five minutes, upon the same subject, unless by permission of the President.

SEC. 14. No member shall be interrupted while speaking, unless by a person rising to a point of order decided by the President

SEC. 15. During periods fixed for scientific discussion and exhibitions of specimens and processes, the ordinary rules of parliamentary bodies shall be suspended, but at other times shall be enforced by the presiding officer.

ARTICLE IV.

Election of Officers.

SECTION 1. The election of officers shall be conducted by balloting, unless otherwise ordered, and a majority of votes cast shall be necessary to a choice.

SEC. 2. All persons elected officers shall signify their acceptance or notify the Secretary within one month after their election.

SEC. 3. The officers of the Executive Committee shall be entitled to their expenses of attending the meetings, the same to be paid by a draft on the Treasurer.

ARTICLE V.

Vacancies, how filled.

SECTION 1. In the event of temporary absence or a permanent vacancy in any office or in standing committees, except in the office of President, the vacancy shall be filled by the President.

SEC. 2. In the event of a permanent vacancy in the office of President, one of the Vice-Presidents shall assume the duties of President until the next annual election.

ARTICLE VI.

The majority rules in all cases, except otherwise provided for in the Constitution or By-Laws; and when in these By-Laws there is a mention made of the will or determination of the association, it must be understood as that of the majority.

ARTICLE VII.

This association may from time to time enact such By-Laws, rules and regulations as it may deem proper for its good government, provided such By-Laws, rules and regulations shall not be inconsistent with the provisions of the Constitution.

Officers and Executive Committee. — G. CRAMER, President, St. Louis, Mo.; H. S. BELLSMITH, Secretary, Rochester, N. Y.; G. M. CARLISLE, Treasurer, Providence, R. I.

Executive Committee.—G. CRAMER, H. S. BELLSMITH, G. M. CARLISLE, JAMES LANDY, W. V. RANGER.

CHARTER.

STATE OF ILLINOIS,
HENRY D. DEMENT, Secretary of State.

To all to whom these presents shall come, greeting:

Whereas, a certificate, duly signed and acknowledged, having been filed in the office of the Secretary of State on the 18th day of November, A.D. 1886, for the organization of the Photographers' Association of America, under and in accordance with the provisions of an act concerning corporations, approved April 18, 1872, and in force July 1, 1872, a copy of which certificate is hereto attached.

Now, therefore, I, Henry D. Dement, Secretary of State of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said The Photographers' Association of America is a legally organized corporation under the Laws of this State.

In testimony whereof, I hereto set my hand and cause to be affixed the great Seal of State. Done at the City of Springfield, this eighteenth day of November, in the year of our Lord one thousand eight hundred and eighty-six, and of the Independence of the United States the one hundred and eleventh.

HENRY D. DEMENT,
Secretary of State.

The *President.*—You have heard the revised edition. What is your pleasure? How shall the matter be disposed of? I would like a motion on the subject.

Mr. COHN, of Tennessee, moved that the matter be referred to a committee.

Mr. RANGER—I would suggest, Mr. President, that the committee appointed to revise the Constitution and By-Laws have done their business and it is not necessary to refer it to another committee, only for the Convention to vote and ratify the committee's action.

Dr. ELLIOTT—*Mr. President*: I would suggest that the Constitution and By-Laws be printed to-day and placed in the hands of every member by to-morrow morning.

Mr. Cohn then withdrew his motion in favor of that of Dr. Elliott, which, being seconded by Mr. Ranger, was put to the vote by the President and carried unanimously.

Mr. POTTER suggested that each member also get a copy of the old Constitution and By-Laws from the Treasurer, and compare them with the new, so as to be able to make any suggestions which might be beneficial.

The *President*—The next in the order of business is the Report of the Committee on the Progress of Photography by Dr. NICOL.

REPORT ON THE PROGRESS OF PHOTOGRAPHY.

I fear that the time has passed in which a report on the progress of photography in any of its various aspects during any one year may be expected to contain anything sensational or even moderately interesting.

The various aspects of photography may be included under five heads or divisions, the optical, mechanical, chemical, pictorial, and commercial; and it seems to me that, with perhaps one exception, they have all reached a degree of perfection from which any advance must be so gradual as to be but little perceptible.

The united labors of the mathematician and optician have already supplied us with many lenses for all the various kinds of work that are as nearly perfect as we may hope to see, so that the photographer with sufficient means at his command, and sufficient knowledge of his actual requirements, can have no difficulty in selecting an instrument in every way suited to his purpose. The optician however is not resting on his laurels, brilliant as they undoubtedly are, but is still figuring and grinding in the hope of reaching a much higher degree of perfection.

It is doubtless within the knowledge of the members of this Convention that there is still considerable prejudice in favor of certain of the lenses of foreign manufacture. But, excellent as they certainly are, I know from much experience and careful examination that lenses in every respect as good are made in this country.

The latest candidates for public favor that have come under my notice are the "Universal Photographic Objectives" of Bausch & Lomb, of Rochester, N. Y. The makers claim for them absolute freedom from chromatic and spherical aberration and perfect aplanation, claims about which I have grave doubts, but as I have not seen the lenses, I merely recall the fact of their introduction.

The new portrait euryscope of Voigtlander & Sons is worthy of notice. It differs from the almost universally employed Petzval combination in being rectilinear and symmetrical, with both front and back lenses cemented, and in covering power is superior to it as eighteen and a half is to fourteen.

Morrison's Leukoscope is also a move in the right direction, especially as I believe that the photography of the future will deal largely in life-size heads.

The single or old fashioned landscape lens has probably been too much neglected, as it certainly gives a more brilliant image than the ordinary or more popular combination, with no other fault than a slight curvature of the lens towards the edges, which in ordinary landscape work is of no importance. I am therefore glad to see that Swift & Son, of London, England, have introduced one, built up of three glasses cemented, of course, and for which they claim a working intensity of the U. S. No. 4, equal to 7–8, or double the rapidity of all previously made lenses of a similar kind.*

The discovery and introduction of the new German optical glass should not be forgotten, as, although it may not be extensively or advantageously employed in the construction of photographic lenses, it will probably be largely used in microscope objectives, and so ought to interest photographers, as photo-micrography is slowly, but surely, forcing itself on their attention. One of the troubles that has hitherto been incidental to the practice of that beautiful art was the difference between the chemical and visual foci of some of the objectives, but that need no longer exist, as several, if not all, of the best makers are now producing lenses specially corrected for the purpose.

Under this head may also be classed the optical lantern, which year by year increases in popular estimation, and which during the past year has been much simplified and improved by various makers. The lantern slide exchange club of several of our larger cities has given an impetus to slide making which cannot fail ultimately to benefit photography, and the recent recommendation by Mr. John Carbutt to add to the developer the well known restrainer ammonia citrate, has materially facilitated the production of beautifully clear pictures.

An apparently trifling, but, in my opinion, valuable, improvement has been made by the substitution of a suitable double concave lens for the usual finder employed in instanteous exposures. It costs much less, gives a more brilliant image, and is more easily managed.

Of the mechanical aspect of photography there is, of course, always progress to report, as a glance at the records of the patent office show. Shutters perhaps more than anything else connected with the art have received the attention of inventors. Early in the year the Prosch Duplex received the award of a committee appointed to examine and report on the matter. Since then it has been considerably improved, and is probably as nearly perfect as it can be made. Mr. Hyatt, of St. Louis, has introduced a shutter of a different kind, but equally valuable for many purposes, and under certain circumstances. It is the invention of Mr. Bain, of that city, and as it is fixed to the camera front is available for all the lenses that may be employed. It gives both rapid and time exposures, and is reasonable in price.

During the year the authorities of the patent office have granted protection to some quarter of a hundred of either new or improved cameras, almost as many tripods and plate holders, and quite a number of burnishers, coating machines, washing troughs, printing frames, etc., with one photo stamp sheet and the apparatus for its production, and one photo-chronograph.

No doubt many of those patented articles will not be known or heard of beyond the circle in which they originated, but there are many of them that are real improvements, and such as will add largely to the comfort of the photographer.

The practical side of the chemistry of photography, while to the majority of the members of the Convention the most important, is also that in which the greatest progress has been made. The conditions under which silver bromide and iodide suspended in a solution of gelatine can be made to assume particular qualities or properties are almost daily being better and better understood, so that makers of sensitive surfaces can now at will produce plates sufficiently varied in character to suit any particular requirement. The intelligent photographer is now able to select just the kind of plate that is best suited for any special purpose, and the time will soon come, if it has not already arrived, when he would as soon think of using one particular variety of plate for all the various kinds of work as driving tacks and tenpenny nails with the same hammer.

Orthochromatic photography has also made steady progress, not so much in the addition of anything new, as in attracting public attention and securing popularity. Early in the year Mr. Carbutt put on the market color-sensitive plates and color screens, by which the most skeptical may easily be convinced of the advantages of the method in all cases in which an approach to true color-translation is desirable. Mr. F. E. Ives has shown some very excellent results in this direction, and good work has been done in England and Germany. The process has been reduced to perfect simplicity, and suitable solutions with suitable directions may be obtained of any stock dealer, so that the photographer, at a trifling cost, can orthochromatize his plates as required.

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* Dr. Nicol has evidently forgotten the new long focus landscape lens recently introduced by Dallmeyer. In other lenses mentioned he notes qualities that have been embodied in Dallmeyer's work, the results of experiments made years ago. We believe none of the new lenses contain a single feature that is not already found in those of Dallmeyer.

In the theoretical chemistry of photography at least one important advance has been made. Mr. M. Carey Lea, of Philadelphia, who was the first to advocate what has been known as the mechanical theory of the latent image, has been the first to give it what appears to be a fatal blow, by the producing of sub-haloids of silver, and leading strongly to the inference than the older sub-bromide theory was, after all, the true one. He is also of the opinion that if ever photography in color is to be obtained it will be through what he has produced, and called photochlorides, photobromides and photoiodides.

Photography in color, so called, has been much brought up, and met with its usual fate—to burst like a soap-bubble. Mr. Mayall and the Cellerier Syndicate, of London, England, have both claimed to have discovered the philosopher's stone of photography, but while the daily papers tried to send it up like a rocket, the ever-watchful photographic journals brought it down like a stick, by showing that in each case it was the old, old story, daubing color behind a transparent photograph.

Of the practical phase of photography, though the most important, I feel constrained to write in less satisfactory terms. Not that no progress has been made during the year, but because it is the only one in which it seems to me there is much room for improvement, and that the opportunity is not sufficiently taken advantage of. No doubt a careful examination of the picturesque present exhibition will show that there is much to gladden the heart of the true artist, and prove that photography has a claim, and a very good one too, to be considered a means whereby works of fine art may be produced. But there are many, alas too many, photographs on the screens that give ample evidence that their authors have no higher idea of the possibilities of photography than that it is a means of producing whatever chance may place within range of the camera. Fine art, of which photography is a thoroughly capable exponent, does not take nature as she finds it, but combines the lines and arranges the lights and shades in such a manner as to convert even a very common-place object into a thing of beauty and a lasting joy. The effect of such treatment in portraiture, the department in which the majority of the members of the Convention are more immediately interested, is to produce not only a mere likeness of the sitter, but something that shall show that while he sat he was a living, thinking being, and prove that in the hands of a capable photographer the camera is as able as the brush to portray the various emotions as they pass across the mind like clouds on a sunlit landscape.

And now I come to the last of the five phases of which I propose to speak, the commercial. I approach this with diffidence and reluctance. I know I am not in sympathy with probably a majority of the members of the Convention, they regarding it as the sole aim and object of photography, while I look upon it as simply the incidental reward of its successful practice. The members will, however, bear in mind that I prefer to speak only for myself, and they are of course at liberty to take what I say only for what it is worth.

How stands photography then from a commercial point of view in comparison with last year? Both better and worse. Better, because new applications have been found for it, and are being almost daily found, in consequence of improvements in what are generally classed under "process work." While other countries have made steady progress, our own has more than kept pace with them, and I think I am warranted in saying that the Photogravure Company, the Mosstype Company, the Gutekunst, the company working Ives' process, and others are now turning out work superior to anything in the same line in any other part of the world. Worse, because of the continued downward tendency of prices obtained for ordinary photographs; or, perhaps more correctly, the ever-increasing number of the photographers who think they must sail with the tide, and join the low-priced ranks in the hope of attracting the trade that will not come. The disease is indeed a desperate one, and like all desperate diseases has been the object of many proposals for its annihilation, conventional interference, boycotting stock dealers who supply the low-priced men, etc.; and more lately, and most absurd of all, to ask Congress to fix a uniform price for pictures. Such quack remedies, like quack remedies generally, do not touch the root of the disease, and serve only to distract the attention from that which would effect a permanent cure. Photographs, as such, are like every other commodity, subject to the everlasting laws of supply and demand, and their prices cannot be permanently affected by any kind of artificial restriction. The man who practices photography simply as a business must make up his mind to compete on fair terms with others in the same line, and should cutting get below the cost of production and a living profit, the weakest must of course go to the wall. But he who succeeds in stamping his own individuality on his work, lifts himself out of the arena of trade and into that of a profession, and may then fix his prices to suit himself without regard to competition.

A vote of thanks was then tendered to Dr. Nicol for his valuable and interesting paper.

The *President*—The next in order is the report of the Committee on Foreign Exhibits at the German Photographers' Convention, held in Braunschweig, August 25–28, 1886.

The *Secretary* then read the report, which was as follows.

REPORT OF THE COMMITTEE ON FOREIGN EXHIBITS AT THE GERMAN PHOTOGRAPHERS' CONVENTION.

Committee.—Mr. Fuller, of Scovill Manufacturing Company, New York; Dr. Elliott, Editor Anthony's BULLETIN, New York; C. Gennert, Chairman.

As chairman of the above committee I have the honor of reporting as follows. The prize pictures from last year's convention of the P. A. of A. intrusted to my care were forwarded partly by freight per S. S. Gellert, and partly by parcel express to Braunschweig, where they arrived in due time, and were added to those already sent by the other members of the committee.

Among the exhibitors were the following gentlemen: Messrs Decker & Wilbur, Cleveland, O.; J. F. Ryder, Cleveland, O.; Barker, Niagara, N. Y.; Cramer, St. Louis; McMichael, Buffalo; Dabbs, Pittsburgh; Gubleman, Jersey City; Guerin, St. Louis; Kirkland, Cheyenne, W. T.; Landy, Cincinnati, O.; Elton, Palmyra, N. Y.; Motes, Atlanta, Ga.

As you are aware, the work of the gentlemen just mentioned was sent in response to the invitation extended to American photographers by Messrs. Einlender, of Cologne, and Müller, of Munich, who had offered prizes for the best collection of photographs by foreign artists, the first prize being a beautiful bronze clock in handsome walnut case, and a handsome gilt cup for the next best exhibit.

The manner of disposing of the exhibits sent to Braunschweig for competition will be fully understood by the following letter from Mr. Potter.

INDIANAPOLIS, IND., July 19, 1886.

MR. C. GENNERT.

DEAR SIR,—Yours received. Please make it clear to our German friends that the exhibit sent them is their property, if they want it, but that they will allow the exhibit to be sent to London, Paris or Vienna should the societies in said cities so request. After that the exhibit is to be returned to the German society.

Please give my compliments to the German association in convention assembled. I know they will have a good time (all Germans do) and I hope they will get much practical good from their meetings.

Yours truly, W. H. POTTER.

The following rules were laid down by the donors of the prizes, and were published in the German and American photographic journals, with the request that the exhibitors should adhere to them as far as it lay in their power.

GERMAN PHOTOGRAPHERS' ASSOCIATION.

The Einlender and Müller endowment to the Photographers' Association to be held at Braunschweig, August, 1886, offer two awards for best portraiture, viz., a bronze clock and a gilt cup.

1. All American photographers, members of the Photographers' Association of America, are admitted to competition.

2. Photographs entered must have been made in the year 1886.

3. They must be taken upon gelatine plates. It is not necessary to send the negatives.

4. Groups and single portraits are admitted of any size. They must be taken direct, no enlargements; printed plain, no vignetting.

5. The collection must comprise at least six pictures. They may be framed or unframed.

6. A mounted crude print, without any negative or positive retouching, must accompany every picture entered for competition.

7. With every picture must be mentioned date, time when taken, objective, and diam-

eter of stop, time of exposure, name and address of exhibitor.

8. Exhibits for competition are to be addressed Mr. L. Spanjer, Herford, Braunschweig, Germany, and marked, For Einlender & Müller, Stiftung, and should arrive at their destination not later than August 20th.

9. The prizes are to be awarded to the two best collections. Lighting, posing, judgment and skill are the points to be considered.

10. A jury of three decides upon the merits of the exhibits while the convention is still assembled. Jurors are selected, one by the donors, one by the officers of the association, and one by the association in convention assembled. The President may be present at the consultation of the jurors and act as adviser.

11. The collections having received rewards are to be incorporated with the circulating portfolio of the association (frames excluded).

12. All competitors are requested to prove that they have complied with the above regulations.

FR. EINLENDER, Cologne-on-the-Rhine.
FR. MÜLLER, Munich.
February, 1886.

When the time came for the judges to examine the exhibits, they were greatly disappointed to find that only one of the competitors had adhered to the rules given above, and should the rules be strictly enforced all the others would be disqualified on account of their oversight.

After a lengthy discussion, at my earnest request the judges decided to waive all conditions and award the prizes.

Messrs. Decker & Wilbur, Cleveland, Ohio, were awarded the first prize, and Mr. Ryder, of Cleveland, second prize. The work of Mr. Barker, of Niagara, N. Y., was considered of such excellence by the judges, that upon their recommendation the society decided to add an additional prize, and a handsome silver medal was awarded to Mr. Barker.

The convention was held in the Egydien church, a spacious and well-lighted building. The space allotted to the American exhibit was one of the best, and, decorated with the stars and stripes, was the center of attraction for all visitors. No person left the convention without paying a visit to the American department, and expressing their pleasure at such a beautiful display.

Fraternally yours,
C. GENNERT.

(*To be continued.*)

Death.

STEGMAN.—Suddenly on August 3, 1887, Albert Stegman, aged 58 years.

Mr. Stegman was in the employ of our publishers many years. He was overcome by the heat and died from its effect. He was an honest and faithful man, and worthy of the confidence reposed in him.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—C. A. R. G. writes: Please tell me, through the BULLETIN, how to vary the proportions of Stanley's concentrated developer to suit circumstances, especially to develop instantanous exposures. (Of course I use Stanley's tropical plates.) Also is citrate of soda which I purchased six months since still good for use in toning.

A.—The developer is best modified by using more or less water and a trace of bromide according to exposure. For instantaneous work use the solutions concentrated. The citrate of soda is good.

Q.—W. A. B. writes: When negatives come from the fixing bath of a brown or reddish color, what will give them a regular negative color. There is alum in the hypo. Our negatives don't frill much, only lately they have this brown or reddish color.

A.—We do not like to use alum in the fixing bath. It is better to use an acid alum bath immediately after developing and then put the negatives into the fixing bath. When you use alum in the fixing bath there is danger of sulphurizing the pictures and perhaps your color is due to this cause. But if the color is pyro stain then use one volume of saturated alum solution, one volume of water, and add to every quart of the mixture one dram of concentrated hydrochloric acid. This will generally remove all stains except those due to sulphur. This same bath, with only half the quantity of water, is a good one to use, after washing the negative and before fixing, as mentioned above.

Q.—G. B. P. writes: Will you kindly answer the following through the columns of the BULLETIN. During the winter and spring I obtained beautiful tones on my prints, but since the weather has gotten very warm I find that it is very tiresome and long, and I cannot get as nice tones as in the fall, winter and spring, when the weather was not so warm. I find it almost impossible to get anything but reddish tone unless I make a very long operation of it, say two or three hours to tone four or five sheets of paper 18 x 22 N. P. A. Pense. I am using a gallon silver bath 50 grains strong and neutral.

Toning Bath.

STOCK SOLUTION NO. 1.	
Gold	15 grains.
Water	8 ounces.
STOCK SOLUTION NO. 2.	
Pulverized borax	120 grains.
Tungstate of soda	240 "
Water	20 ounces.
To tone take	
Stock solution No. 1	1½ ounces.
" 2	10 "

I wash my prints in two waters, then redden with acetic acid No. 8, then wash all silver out and tone, fix (one part saturated solution hypo to twelve parts water), then treat them to strong salt water, strong enough to float an egg. I have been making first-class work all along until lately. Thought perhaps it was my toning room being too warm. Please tell me what is the matter, and how long does it take to tone five sheets of paper say 18 x 22. I am a subscriber to the BULLETIN and would not do without it. By answering the above you will greatly oblige.

A.—Abandon the acetic acid and use a weak solution of salt instead; this will obviate the red tone and convert any free silver nitrate into chloride. Run through two or three changes of water before toning. If toning bath is in good working order you should tone five sheets of paper per half hour. Ammonia may also be used instead of acetic acid, one dram to quart of water.

Q.—W. H. B. writes: Will you please tell me how I can make a photograph of a person dressed in white with a black background. I never saw one, but have heard of them often. I have an idea of a method of doing this, but have not experimented any with it.

A.—We see no difficulty in making pictures in the manner that you describe. Place your subject against a black background which of course has a dead matt surface, and use side screens to properly illuminate the shadows and you will get the picture you desire.

Q.—J. H. S. writes: I am using ready sensitized paper, and there are some questions I would like to ask you about it. What does the soaking in citrate of soda solution do to the prints? How many times can the same solution of citrate be used over? How many prints 5 x 8, can be toned by a mixture of bath according to formula, six ounces of water, etc? Can this mixture be used over; if so, how many times? I have used sensitized paper altogether since I commenced this business, and have carefully followed the formula, but I cannot get tones that satisfy me. They are not deep enough, being too much of a brownish cast. Is there any difference in the chemical action between turning red litmus paper blue and turning blue litmus to red and back again to blue? About how long ought it to take to tone a batch of prints? If they will not tone soon, is it of any use to let them remain in the bath a longer time? Does the character of the negative make any difference in the tone of the prints? If you will please answer these questions you will do me a great favor.

A.—Soaking in citrate of soda solution serves to remove the excess of nitrate of silver and the preservative used in making the ready sensitized paper. The solution (six ounces) should be sufficient for a sheet of paper (18 x 22) or an equivalent number of 5 x 8 prints. The toning bath, according to formula, contains about two grains of gold chloride; this should be sufficient for one sheet (18 x 22) of paper or the equivalent number of 5 x 8 prints; but in practice it is better to use more gold and only tone about half the number of prints. The bath can be used repeatedly, always adding gold solution a little while before the toning is commenced. If you are troubled with brown tones, fume longer, print till only high lights are visible, don't wash in citrate of soda, but use one dram of ammonia in a quart of water instead of the citrate. By this procedure you will get black or purple tones according to the length of time used to tone. Toning should not take longer than half an hour in warm weather. Turning red litmus blue means making it alkaline; turning it red means making it acid; and if you turn it blue again you again make it alkaline, that is, you neutralize the acid used to make it red.

Q.—N. W. E. writes: Will you kindly inform me if I can make instantaneous views with an E. A. Novel View Lens (which is single achromatic) on a Stanley tropical dry plate, sensitometer No. 25, using a drop shutter? If not, what is the cheapest and best lens for the purpose (5 x 8) size. Any information relating to the above will be very gratefully received.

A.—You can obtain instantaneous pictures with the above lens and plate, provided the light is very good. An E. A. rapid lens is better.

Q.—M. R. J. writes: Are the curtain slides on dry plate holders patented? Please answer through Bulletin.

A.—We know of no patents covering this device. The idea is a very old one.

Q.—C. E. V. writes: Will you kindly give a safe and efficient receipt for reducing a too dense negative?

A.—Immerse in a solution of bromide of copper, made by adding 8 grains of copper sulphate and 8 grains of potassium bromide to the ounce of water. When the negative becomes whitened, wash with water and then put it into a hypo bath, where its density will be reduced. If one operation does not suffice, repeat until the desired density is obtained.

Views Caught with the Drop Shutter.

The only prize medal offered for improvements in photographic apparatus at Chicago was awarded to the Cooper Enlarging Lantern. The decision was obtained by the votes of the members, and a large majority of the votes cast were in favor of this apparatus.

The Photographic Merchants' Board of Trade was formerly dissolved at Chicago on August 8th, and on the following evening a supper was given to suitably "bury" the Board, Mr. Gayton A. Douglass, of Chicago, presiding.

The new Photographic Merchants' Association has effected its organization. This consists of the dealers, exclusive of the manufacturers, and we hope that it will accomplish all the good its best friends desire.

Genelli, of St. Louis, has just received notice of the allowance of his sixth patent pertaining to stamp photographs.

Edward Burgel, a photographer, committed suicide at a Bowery hotel in New York City on August 16th last. He had only been married five weeks, and his wife believes he was demented, he having acted strangely lately.

N. C. Thayer & Co., of Chicago, had a most unique contrivance for the supply of materials to photographers in their city. This was a veritable stock-house on wheels, managed by their genial representative, Chris. Anderson. It certainly was the most complete thing of the kind we have ever seen. Various boxes and cupboards are arranged in a closely covered light wagon, where chemicals, paper, plates of all kinds, in fact everything that a photographer needs, is ready at hand. By an ingenious arrangement of windows in front, the horse can be driven through a heavy rain-storm and not a drop of water get inside, the reins passing through a water-tight rubber closed opening beneath the windows. The whole affair speaks well for the enterprise of this pushing Western firm.

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Evening Post Job Print, N. Y.

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Glimpses of Switzerland.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

SEPTEMBER 10, 1887. Vol. XVIII.—No. 17.

THE PICTURES AT CHICAGO.

It is impossible in the limited space at our disposal to do justice to all the pictures at the Chicago exhibition. The collection was a very large one, and the exhibition hall was admirably suited to the purpose; but the tardiness of the exhibitors in hanging their pictures was certainly reprehensible. There were some exhibits that were not in place on Tuesday evening, and possession of the building was obtained on Monday morning. This delay in hanging the pictures leads to the disturbing of the business meetings of the association when they are held in the same building and should most certainly be stopped.

The pictures as a whole were of a high order of merit, but we do not think that they represented as many sections of the United States as we should like to see. Nevertheless we must admire the courage of many of the smaller artists, who sent pictures from little known towns over a wide stretch of country.

It must be understood that we are not attempting to give a detailed account of any one exhibit, but will endeavor to give our readers an idea of the impression some of the pictures made upon us. Furthermore, this does not necessarily include all those who impressed us well, but only those that we can afford space to note.

The gem of the exhibition was unquestionably Mr. Landy's "Man, Know Thy Destiny," a composition that breathed with artistic feeling. As a photograph it reflected the skill of the hands that made both negative and print, the perfection of detail in the plate and the charming tone of the picture being most excellent. This was the picture that secured for its exhibitor the Blair Prize Cup, a handsome silver trophy, holding about a gallon, made by Tiffany & Co., of New York. There is no artist in the country who will so carefully labor to retain this prize as Mr. Landy, and it will be an interesting contest next year to see if he can retain it. We are very much pleased to state that we have secured the privilege of reproducing this beautiful picture as an illustration for the Bulletin, and our readers will then have a chance to get a small idea of this exceedingly handsome piece of photographic art.

The collection of pictures by F. W. Guerin, of St. Louis, displayed an advance over his St. Louis work that was as pleasant as it was surprising. We thought his exhibit last year one of surpassing excellence, but this year he seems to have breathed into his pictures a life and feeling peculiarily artistic and captivating. It is impossible to give our readers an idea of these gems of pho-

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tographic skill. We would simply note that the effects with children were probably the best and most successful in a collection in which we found not a single poor picture.

H. McMichael had an exhibit of pictures which showed his ever advancing career as an artistic photographer. Here also we have been fortunate enough to secure a copy of a group of his best pictures, and shall use them as illustrations for the BULLETIN. But to fully appreciate the work of this painstaking artist his original pictures should be seen; they are gems in every sense of the word.

Our good friend G. M. Elton, of Palmyra, added another gold medal to the already goodly number he has captured by his artistic work. This makes six gold medals awarded to this enterprising, genial and energetic young artist. His work at Chicago exhibited the same good taste that he has always displayed in his pictures, both in the production of the negatives and the final finish of the pictures. In a large collection there was not a picture that was not a study and that did not speak for the individuality of the artist's work. We have yet to see an inartistic production of Mr. Elton's. We hope in this case also to be able to give our readers an illustration of Mr. Elton's work; seeing is so much better than description.

W. H. Potter, of Indianapolis, had a collection of pictures that were characteristic. The feeling of repose that is secured by this artist is truly remarkable, and every picture tells of an influence that is at once artistic and peaceful. The picture that pleased us most in this collection was a large one entitled "The Graduate," a wonderfully beautiful piece of artistic photography. The subject is a very pretty young lady with a piece of music in the act of singing, as at a college commencement. The pose is exceedingly life-like; the action caught in the face, the slightly parted lips, in fact the whole figure, is breathing with life and harmony, and it is so beautifully done that one can almost hear the notes as they roll from those pretty lips. If Mr. Potter had only exhibited that single picture he would assuredly have deserved the gold medal he won; but there were others in his collection which, if not as exquisitely beautiful, were nevertheless filled with life and artistic feeling.

Another handsome exhibit was that of C. W. Motes, of Atlanta, Ga. Here were found a number of large pictures that were fine pieces of photographic work. The two most striking pieces of composition were called "The Old South" and "The New South." In the first of these we have the picture of an old darkie sitting against a fence eating a piece of watermelon, and the very image of contentment. In the second a colored boy with a boot-blacking box strung across his shoulder is decorating the fence with a chalk delineation of one of the gentler sex of his race, the very picture of indolence and yet contentment. These are two of the best pieces of composition we have seen for some time, and Mr. Motes may feel proud of them. The peculiar life of the Southern darkie depicted in these photographs shows that the artist is alive to the scenes around him that go to make up interesting genre studies.

The exhibits of Messrs. Appleton, Stein, Strauss, Scott and Courtney were all of the brightest excellence, and we should very much like to say more about them. Mr. Stein's exhibit was characteristic for the good taste displayed in the mounts, which were India tints, and gave a very artistic effect to the pictures. In J. C. Strauss' exhibit, the darkie fondling the head of a white horse, entitled "A Private Conversation," was the most admired picture in the collection, and wonderfully artistic. The exhibit was full of gems of good taste and photographic skill. In Mr. Courtney's exhibit the fine large heads were a marked feature, and deserve the highest praise. Mr. Scott's picture of General Logan and his wife was an interesting object in his truly fine collection.

J. F. Ryder of course had a very handsome collection. These were large pictures and filled with fine artistic feeling, in addition to being examples of the highest photographic skill. The large heads were exceedingly fine pieces of portraiture, with the finest effects in posing and modeling. It is impossible to give an idea of the work of this experienced and talented artist. His work must be seen to be appreciated. The picture of a lady, called "Her Portrait," was an exceedingly fine production, full of life, fine artistic posing, and with a beauty in the subject that captivated all who saw it. Another fine picture was a large head, with a skull-cap on and a strongly marked profile, having a pen behind the ear, entitled "The Scribe." It was a truly handsome piece of photographic work.

We expected to be able to finish our comments upon the pictures in this number, but shall have a little more to say in the next issue of the BULLETIN.

EDITORIAL NOTES.

WE are glad to note that the Photographers' Association of America has taken hold of the question of insurance for photographic studios. The rates at present paid by some photographers are simply outrageous, and we hope the committee appointed will see to it that justice is obtained. In the present time of sharp competition it is very important that such taxes upon a man's resources should be reduced to a minimum.

IN the competition for the prize medal awarded by the Photographers' Association for the best improvement in photographic apparatus there were six competitors, and in a total of 244 votes cast, the Cooper enlarging lantern obtained 133.

THE only other important competitor for the above medal was the Endean posing chair, which also got a large number of votes, showing it to be such an improvement as to attract the general attention of photographers.

WE have just received the prospectus of the International Exhibition of Industry, Science and Art, to be held at Glasgow, Scotland, in 1888. It is under the patronage of Queen Victoria, and the Secretary is W. M. Cunningham, the offices being at 27 St. Vincent Place, Glasgow. There is a section devoted to photographic apparatus, another to photographic art work; and American manufacturers and artists will probably find it interesting to take part in the exhibition.

WE are pleased to note the following in the *Chicago Tribune*: "Probably McMichael, of Buffalo, the winner of several prizes before, has the finest show of large photographs, and certainly in posing and technique he is second to none. His work is as well worthy of study as a collection of oil paintings."

Mr. C. F. Snyder, a member of the Signal Corps of the United States Army, has succeeded in taking a picture of the sunrise from the top of Pike's Peak in Colorado.

With this issue of the Bulletin we complete the report of the Photographers' Association of America and also give most of the papers read or presented there. In our next issue we shall finish the papers. We have done this and kept some other papers standing, in order that our readers may have a full and early report of the proceedings of the Chicago Convention.

Our answers to correspondents are also crowded out of this issue of the Bulletin to make room for the report of the Chicago meeting.

THE EXHIBIT OF APPARATUS AT CHICAGO.

This department of the Chicago Convention was a most interesting feature. Every important manufacturer in the United States was represented, and all seemed to be determined to make their exhibits interesting.

The dry plate manufacturers had some fine examples of pictures made upon their plates, and it seemed to be very difficult to determine which was the best plate among those who are noted for high qualities. Cramer showed hundreds of examples, ranging from cabinets to life-size portraits, and *petite* landscapes to the great pictures of Rocky Mountain scenery. Stanley had a magnificent display of all sizes, giving some most remarkable evidences of the rapidity of his plates in numerous instantaneous views of steamers under full headway, yachts, and other subjects equally difficult to capture. The Seed and Eagle plates were also well represented, and many good pictures were seen made upon these plates.

Among the manufacturers of apparatus our publishers had the usual fine exhibit which their enterprise and public spirit always prompts them to make. It must also be remembered that this exhibit was the result of a few weeks' labor after the destruction of much apparatus intended for the Chicago exhibition by the recent fire in their New York store. We cannot help congratulating them upon the energy displayed in this matter; for, in spite of all drawbacks their exhibit at Chicago was the largest and most interesting in the manufacturers' department, and the admiration of crowds of the fraternity. Here was displayed some exceedingly fine examples of enlargements upon the new bromide paper, which were all made with Cooper's enlarging lantern, using an oil lamp, a feat hitherto unattainable for obtaining such perfect results as there displayed. The usual series of Climax and other cameras with many little improvements for the photographer's convenience were also shown. A number of cameras made of handsome Circassian wood were much admired by those who like to see artistic work in apparatus as well as pictures. The new Climax detective cameras were also objects of interest, the improvements in the various parts being highly appreciated, while the new roll holder for paper negatives interested many who look to the development of this phase of photography. A great many other things were shown, but we cannot afford more space here to enumerate them.

The Scovill Manufacturing Company we were glad to see again as exhibitors at the Convention. The display was a large and handsome one, and representative of this well-known house.

The Blair Manufacturing Company had a fine display of their various cameras, finely finished, and handsome in every respect. Here we found the English compact reversible back and the Cincinnati reversible back cameras, which are neat and well designed pieces of apparatus. The Lucidograph camera, made by this firm, has also received many improvements.

J. A. Anderson, of Chicago, had a number of large handsome cameras that exhibited good workmanship.

Among the merchants that deal in photographers' supplies we noted Smith & Pattison with their usual display of burnishers, accessories and other apparatus. This enterprising firm also had an exhibition at their store on Wabash avenue, where 6,000 feet of floor space was occupied with backgrounds, curtains, and accessories of all kinds, a truly magnificent display. To prevent confusion it was necessary to issue tickets to this extra exhibition, and it was well worth the trouble to see it.

The A. M. Collins Manufacturing Company had their usual handsome display of cards and mounts. It is needless to say that they were artistic in every sense, and showed a keen appreciation of the wants of photographers.

Sweet, Wallach & Co., of Chicago, had a very neat exhibit of artistic draperies, accessories and apparatus, that were well arranged and made attractive in display. The French printing frame support and the Van Sickle shutter were exhibited by this firm.

W. D. Gatchel, of Louisville, Ky., exhibited the Bonton shutter as applied to four quarter gem lenses, and it interested a large number of the fraternity.

J. C. Somerville, of St. Louis, had a display of fine apparatus and accessories, and also a new lens called the "Universal."

Reimers & Katz, of Milwaukee, exhibited their Eureka metallic points for retouching, and they interested a goodly number of the photographers at the Convention.

H. A. Hyatt, of St. Louis, had a very well arranged exhibit, in which he showed the magic vignetter, consisting of a number of overlapping curved points that can be opened or closed at will; also the comb-like vignetting attachment of Kuhn, and Bain's imperial shutter for time and instantaneous exposures, which is fitted into the tube of the lens like a Prosch duplex.

Benjamin French & Co. had their usual display of Voigtlander lenses, which included the new portrait Euryscope.

Allen Brothers, of Detroit, had a handsome display of Suter lenses and an exhibit of nice work done with them.

Buchanan, Bromley & Co. had a very fine exhibit of platinotypes. These were some of the best pictures we have seen produced by this method in the United States. Our European friends excel in this kind of work, but we think the exhibit at Chicago was about equal to those we have seen from abroad.

In the department of accessories, L. W. Seavey, of New York, was as usual the most interesting exhibitor. Here we found a very elaborately carved combination stairway; a number of unique relief signs; a relief door-panel and cottage window; a double-trunk tree, one limb adjustable; a stone wall and turnstile; a cottage window for little children; a three-cornered antique cabinet; a rocky seat combination with adjustable rocks; hand-painted draperies; and a host of other accessories needed by the photographer; all truly artistic, ingenious in construction, and very unique in design. Mr. Seavey is always treating us to some happy surprises in his particular line of work.

J. W. Bryant, of Laporte, Ind., also had an extremely interesting exhibit of accessories, the principal feature of which was that they were painted in oil. By this method of procedure they do not spoil the most delicate draperies, and are vermin-proof.

John Young, the silver waste chemist, had an interesting display of the apparatus he uses in refining wastes, together with a number of fine specimens of his finished products.

The Air Brush Company had a very fine display of work done with their apparatus, and their stand was always surrounded with an interested crowd watching the use of the air brush.

H. J. Thompson, of Chicago, had an interesting exhibit of an automatic print-washer which worked beautifully, the water used in washing forming the motive power of the machine.

There were quite a number of other novelties at Chicago, but we must defer notice of them until our next issue.

ON THE TREATMENT OF VERY SENSITIVE PLATES.

BY G. CRAMER.

[Read before the Chicago Convention.]

Dry plates were originally made to take the place of wet ones, with hardly a thought of making them more rapid than collodion, and the keeping quality was at that time the main desideratum.

That the dry plate contained within itself the possibilities of great speed was evolved at a later day, and as the working of dry plates became more familiar to the craft, a demand for more speed or sensitiveness was made, and as promptly met by emulsion makers, and plates are now made of sufficient sensitiveness to reproduce objects moving at a high rate of speed, and really wonderful achievements in this direction are to be seen every day.

That plates of a high degree of sensitiveness require very careful treatment is at once apparent, when we consider how readily they respond to the faintest touch of light, whether entering through the lens or through a pin-hole in the bellows of the camera (which may be invisible from the outside). The minutest ray of light entering through door of slide, or between tablet and back of camera—prolific sources of trouble—will be promptly registered upon the plate, causing fog, for which the plate will often be blamed and condemned as foggy and worthless.

Although very sensitive plates are as easy to manipulate as plates of lower sensitiveness, they require more care and attention to have the proper safeguards thrown around them; safeguards which really should be used for all dry plates.

It is not fair to subject plates of different degrees of sensitiveness to the same conditions and treatment to determine upon their merits. For reasons already stated, a slower plate may remain perfectly clear when a more sensitive plate will show signs of fog, in the same proportion as when an old style wet plate would be compared with a modern dry plate. It is a pity that so often the finest plates are spoiled by improper treatment.

If photographers would all be as careful in their manipulations as the maker of the plate has to be, there would be little complaint, and it would not happen that one will say, "Number so and so is no good." Another will write, mentioning same number, "Send me every plate you have of it." Another one writes, "I want a very rapid plate, but one that is not so sensitive." This is an absurdity, as rapidity and sensitiveness are one and the same and cannot be separated.

To work very sensitive plates successfully, everything should be in best working order. The dark room, aside from being roomy, well ventilated, and having all the necessary conveniences, should be perfectly light-tight, and the color of its inside non-actinic. Colored paper used for the lantern or window will fade, and should be renewed from time to time.

Examine dark room, camera tablets and lens at intervals; see that your dishes are always clean and everything convenient; and have your chemicals fresh and pure and in well stoppered bottles.

Bear in mind the difference between chemicals of the same kind, but in different form. For instance, granular sulphite of soda is about twice as strong as sulphite of soda crystals. Carbonate of potassium is about equal in strength to dried carbonate of soda. Both are about twice as strong as carbonate of soda crystals, or sal soda as it is commonly called.

Guard against any trace of diffused light, too much exposure to the colored light while developing, or having the colored light too strong.

Use fresh developer for short exposures and old developer for over-timed plates, remembering that old developer will produce more contrast and clearness. The addition of a little old developer or a little bromide of sodium will often prove beneficial. Mix old and new developer in proper proportions to suit the exposure. If very much over-timed, restrain by adding solution of bromide of potassium; if under-timed, dilute the developer. Do not try to force the development by adding an extra dose of alkaline solution, as this will only injure the plate.

Observe that a developer strong in pyro produces strong negatives, and that the temperature of the developer and the quantity of alkali it contains is of great importance. If the developer is warm, or contains too much alkali, it will fog a very sensitive plate. Keep the developer cool in summer (about 70 degrees F.) and about the same temperature in winter. In summer the strength of alkali should be reduced one-half the strength used in winter.

If uncertain about correctness of exposure, start with developer diluted with plenty of water, so that you may see what the plate wants before it is too late. If you commence with a strong developer the image will flash up at once, and the negative may be spoiled before anything can be done to save it, but if you commence with diluted developer you have a chance to change or modify the developer as the plate requires it.

There are many points in developing to which a careful operator will give due attention, and the results will demonstrate that it is worth all the labor and study to thoroughly master the science of it.

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KILLED BY OVER-DOSING.

BY J. F. RYDER.

[Read before the Chicago Convention.]

The uses and abuses of developing methods in general practice is my subject. I give my impression and my opinion more as an observer than as a handler. I do not expect to tell you anything new, but may attract your attention to my impressions in a manner to get some value if any be in them.

The formation of the image on the negative plate and the positive paper are operations of such importance that we can hardly learn too much about them.

First let us consider the negative. You all know that pyro is the developing agent (I say pyro, because it is almost universal in this country), and that the accelerator, whether it be ammonia, soda, or potash, is the power that sets the pyro at work. You understand that the pyro produces the intensity in lights, or the white parts of your image, and that the accelerator takes care of the dark parts by working up the lower shadows and giving detail and modeling through the lesser ones.

You all have your formulas, which you believe in. It is not my purpose to disapprove of any one, but to caution you to a careful use of all.

The exposed plate has an image on it. Possibly the image is a landscape, some parts of which lie in full light while another part falls in deep shadow; or a clump of heavy dark foliage occupies the foreground. Perhaps it is a room interior, which was dimly lighted; or the portrait of a person taken much in shadow. We are about to call that image into a palpable existence, to make a visible fact of it.

In case of either of the above described exposures shall we take the usual formula of proportion, so much No. 1, so much No. 2, to so much water, as printed directions to be found in every package of plates says is proper?

Dare we do it? I say no, if we care to find the best results. Now is just the time to go slow; the image can be better coaxed than driven. Take time, be patient, and get your reward. Understand you cannot get your density first and your details afterwards, but can first get your details and afterwards your density. It is always best to first lay the foundation and then erect the structure. Any builder will tell you that.

One of the most valuable elements of a developer is water, and it is too little used; or, in other words, too little of it is used. Particularly for all plates of suspected under-exposure or of doubtful time, as well as for all large heads, a weak developer is required to start, and if found to want more strength it is easily changed by addition of pyro.

Looking to the pyro for density and the accelerator for details, it is easy to understand by varying the proportions of these two elements almost any desired effect can be secured. The strong developer gives dense harsh results, while a weak developer gives soft and delicate effects, hence the value of more water. Remember the mild power is most effective for perfect results in developing. Don't give heroic treatment at the start in any case.

It often happens at the close of a day's work with a big crop of negatives to develop, that the operator, anxious for supper, pushes the work too rapidly for safety. The next morning they are found coarse, harsh and muddy. They were killed from an over-dose. If the proprietor cares for the good name of his work, the sitters must be recalled and retaken. Too much haste often spoils what a little patience would have saved.

What I believe to be the best and safest method is to commence with the developer weak, and with the accelerator in excess of the pyro. As the development progresses and a want of more strength or density is discovered, pyro should be added to give it. To wear the same weight of clothing throughout the year, in cold and in hot weather alike, in a climate like ours would be reckless and inhuman, but no more absurd than to give all plates the same strength of developer. No man can give a formula for all plates and all conditions, but by care and observation all men who develop plates may learn to adapt proportion and strength of solution to the plate's requirement.

Now a word about making the image on the albumen paper. All printers know that silver makes the print; too many of them think the more silver used the better the print. As a rule, when anything is found to be wrong more silver is doused as a remedy. Where 40 grains of silver to the ounce of water is recommended by the albumenizer of the paper, who knows the proportion of salt used, and bases the requirements of silver upon that knowledge, the usual printer requires 60 grains.

Just enough chemicals for plate or paper is better than too much. The tendency to over-dose is prevalent, and the results are similar upon plate and paper alike. In both cases the over-dose gives harsh effects; forms a crust upon the surface, preventing the gradual and perfect conversion through the film; clogs the shadows and flattens the lights. It is not unusual to see prints with the shadows and dark spots loaded with a bronzed mass and sometimes even a green fog from over-dose. Gold is also subject to the same abuse, being sometimes used so strong as to destroy rather than produce good tones.

A little more knowledge among operators and printers of paper, and necessary conditions for successful work in their departments of photography, and a careful observance of the requirements, would greatly lessen the mortality list in plates and paper.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

OBSERVATIONS AND COMPARISONS.

BY JOSHUA SMITH.

[Read before the Chicago Convention.]

WHILE it is not my motive to give a lengthy paper on this subject, I shall refer to German, French and English as compared to home photography, trusting that it will be of value to you, especially to our young members.

It has been often said that galleries and museums of European cities, which contain the choicest art treasures, the collection of centuries, create large influence in the art training of the student photographer. This advantage you have often heard referred to in former conventions of the P. A. of A. as one that our foreign photographers enjoy. During my tour in Europe I visited their celebrated art galleries by the score. I walked along walls covered with canvas for miles, representing all the old masters' paintings, large and small, the majority representing sorrow and subjugation. How shall we employ these studies in photography in this advanced nineteenth century, when it is our endeavor to represent in our work life and joy?

But does the photographer take advantage of such object lessons that his government has so bountifully placed at his disposal? Upon inquiry I was told, and my observations agree, that art galleries and museums are the abode of tourists. Then what advantage have our foreign brethren in the race for progress over us? Compare their miles of canvas and marble to the miles of photographs you have been enabled to study through this association, and the thousands of object lessons here placed before you.

For a number of years several German photographers favored our association with their best work, which received our universal admiration. But how about the average of work in Germany compared to America? Large cities like Berlin, Dresden and Frankfort contain several very fine studios where good work is done, but the same is true of New York, Boston, and this city, Chicago, and if we compare their elegance and conveniences, sizes of cameras, etc., and the amount of large work done, the Germans must take a back seat.

While several of the studios in Berlin are in the Unter der Linden, the main business center, they are mostly situated in the rear of buildings. The entrance is through a passage into an open court, the studio generally being on top of a three or four-story house accessible only by narrow stairs. Others, more favorably situated, are built in a garden, but they are often in the outskirts of the city and hard to find. Sky-lights in Berlin are very large, some having a length of forty to fifty feet.

But while the studios are so unfavorably situated, the photographer displays his work along the public squares and other places accessible to them. Some have erected elegant pavilions for their display, and these contain booths for the sale of opera tickets and for making appointments for sittings. Such a novelty might be introduced here. The galleries in Berlin, Dresden and Frankfort are not so numerous as in New York alone. Photographers of small means and poor workmen seldom locate in large cities, but remain in small towns, or tramp through the country.

The prices obtained for cabinets range from ten to thirty marks, and orders from a quarter to half dozen are the rule. The cabinet has not obtained public favor as the carte de visite still holds the fort. Prints above 10 x 12 are the exception, the majority of photographers not having instruments to fill an order.

There is another individual I must not overlook, for I know you are all anxious to hear from him, the Cheap John. He has his abode there too, but, unlike our American Cheap Johns, he is not so numerous nor so well up in all photographic branches yet, for he is a very poor copy of his American relation. I noticed a fellow who had his place on one of the principal streets in Berlin, and over his shop—a very small one indeed—he displayed the now famous large white rag of distress, "Americanischer schnell photographics, ein mark!" Now you will be astonished when I tell you that this American quick photograph was our old and long-forgotten ambrotype on glass and backed with asphaltum.

If he had used ferrotype plates it would have been proper to term them American.

As I have stated, a poor workman seldom finds a foothold in large cities, so the average work is perhaps more uniform than with us, but in the smaller towns it is greatly inferior to our own. Small work, and in fact all photographs, receive more retouching than with us; this is perhaps owing to the small wages paid for skilled labor. But the prints, and work in general, lack force, and while technically they are full of detail, yet they show a weakness and often flatness to a remarkable extent.

I noticed this so much, that it appeared to me peculiarly German. I felt somewhat disappointed, as I expected to find photography *par excellence* in Germany. I notice several old and well known firms of collodion fame have not prospered much, for their new and young competitors are moving into the front ranks. Photo-mechanical processes have here produced better results than perhaps in any other country, due to the technical skill of the German artisan.

Paris, the beautiful city of boulevards and attractive shops, the custodian of art treasures founded by Napoleon, has some studios where good work predominates. She has also a number where work of less merit is the order of the day. In fact the grades are well mixed, and you can be accommodated from one franc to one hundred francs. The photographs produced here are entirely different from the German productions, and several studios are sumptuously furnished. Their sky-lights, reception rooms, and manner of conducting business is similar to our own. Their enterprise is also greater than their German neighbors.

I was greatly pleased with the work of one firm. Their prints were simply perfect in modeling and rich chemical effect. The tone was a rich grayish purple, entirely different from anything I have seen abroad in photography. Their *modus operandi* I was told consists in using a small light, large and long focus lenses, well stopped down to about one-third of full aperture, exposure from ten to twenty seconds, and development in weak liquid ammonia, bromide of ammonia and pyro. The negatives made in this establishment were simply perfection. Most of their work is enameled and 100 francs per dozen is charged for cabinets. The running expenses I was told amounted to 200,000 francs annually. I mention this also as worthy of note.

The developer mostly in use is iron. Cabinets and panels are in great favor among the Parisians. Paris offers nothing new in styles or sizes. The electric light is now used in several establishments, and I was told that a large trade was done late in the evenings in ball costumes. During dark days in winter the light is started generally between two and three in the afternoon, and very good negatives are procured thereby. I have a few prints and shall be pleased to show them to any one who desires to see them; they are soft, with good modeling.

We will now proceed to England, and in London make our observations, providing it is clear enough to see. Here the photographer during half of the year is enveloped in fog, not chemical fog, but real solid London fog. The color varies from a light gray to a light orange, and at times non-actinic enough for a good dark room. London photographers must have hailed the gelatine plate as their deliverer, still I was told that with rapid plates long exposures are still the rule. I observed excellent modeling in the prints of the best studios, while at others hardness and under-exposure. As their work, so their prices, and I noted a greater difference than in the other cities mentioned. The carte de visite is still on top. At some of the studio doors you are requested to step up and have a sitting for a shilling, sixpence each for six, while at others you pay your guinea. Very little work above 10 x 12 is done. The large firms in London have numerous branches in the suburbs and watering places, as well as in larger cities.

Liquid ammonia and pyro is here the favorite developer, although iron and the other alkaline carbonates are in use. Photographic exhibitions, notably that of the British Association, are held annually, but though they have no comparison with the P. A. of A., still they have some good points. I noticed the title of each subject printed on the mount, and the catalogue gives number, title and by whom. Each exhibit of the members seldom reaches over half a dozen. This might be tried by us and would make the exhibition more interesting, especially if the title adopted by the exhibitor be of the ideal kind, and not for a portrait such a one as "A Man." There is certainly room for improvement in that.

As isochromatic plates are now used in England with a high grade of sensitiveness, I hope for the benefit of the fraternity there, that before long the photographer will be able to shut out the fog, light his gas, continue his sittings, and with instantaneous shutters make his exposures and be happy.

I noticed abroad that they excelled in their smaller work, but as the size increases they fall way behind. When I told them of what was being done over here, the magnitude of our work, and the P. A. of A., the answer came, "Oh! that is another American story, or no story." I congratulate you, for you have made far greater progress in photography than the fraternity abroad, and it has been accomplished through the influence and the thousands of real object lessons that have been placed within your reach by this association. Your work to-day shows that you have studied, practiced and improved, and our members who take their well-earned prizes stand to-day first and foremost on the list. You have here the finest exhibition of photographs, one that excels all former attempts. Our manufacturers and dealers have in this vast building the greatest show on earth. Our apparatus is superior, our plates more sensitive and uniform, and you are wide-awake enough to purchase and introduce a good thing when you see it, and progress with its use.

PROGRESS IN PHOTOGRAPHY.

To the Editors of the Bulletin.

In an article by Dr. Nicol on "The Progress of Photography during 1887," read before the Photographers' Association of America, at Chicago, I find that his remarks on lenses are not only wrong in their general tone, but apt to mislead. He says that "as good lenses are made in America as in Europe." In making such a sweeping assertion it would sound better if the style of such lenses was stated. It is probable that a plain biconvex or other simple form of lens made from ordinary glass can be produced in our country fully equal to any made abroad, but when it comes to a photographic objective, any such assertion should be qualified. In fact I am surprised that the leading photographers in the country (and of whom very many were at the Convention and probably listened to the paper) did not rise in their seats and demand a qualification, as it was a direct charge that they were so ignorant of the quality of lenses that they would pay $100 for an imported one when a less sum would purchase a home-made affair equally good.

In this enlightened age I am sure that the professional photographer is not so foolish, and from practical experience knows otherwise. Go into any good gallery from Maine to California and see whose lenses are used. Ask the proprietor as to whose he has tested before he selected those he purchased and his opinion as to the merits of each. Go to any manufacturer and see how his productions compare with his orders.

I know positively that the highest priced lenses made in the world cannot be produced in nearly sufficient quantity to meet the demand, and that in one season, in this country alone, hundreds have been obliged to purchase others, because they could not wait for their turn to come to receive one of those foreign lenses whose maker has been before the public so many years, but whose name was so completely ignored by the Doctor in his paper. I refer to Dallmeyer.

Speaking of a single achromatic lens, composed of three glasses cemented together, as being issued by one house, why does he not go further back and give credit to Mr. Dallmeyer for his wide angle landscape lens, made of three glasses cemented together, and to the long focus rapid landscape lens issued within the year by the same gentleman, after formulas by his late father, the results of experiments of years gone by. Why does he quote the aplanatic portrait objectives of one house in Germany and so entirely ignore that of Mr. Dallmeyer? Why does he puff up what he calls a "Universal" lens made by a firm in this country without saying that it is as close a copy as they can make of a Dallmeyer rapid rectilinear, the first aplanatic lens known in the States. Give credit to whom credit is due. If you do not have money enough to buy a Dallmeyer, and have to put up with a cheaper lens, do not say that you bought it because it was equally as good as the Dallmeyer and cost less, but state the plain honest facts. No one will find fault with a man because he cannot afford to buy a certain article, but I would esteem the one who came out fairly and bluntly, square and honest. When an assertion is made that one certain individual makes a better, or equally as good, lens than another, I expect he will be able to substantiate his statement, and would be pleased to see a test made that shows the merits of each. When he says that "a lens is the best at the price" it sounds rather more reasonable, and gives a chance to sundry manufacturers to demand a test, who will freely admit that they cannot equal the best ones, however nearly they may approach them. When it comes to the selection of a lens, if any one desires the "test," and finds one that is but one-hundredth of one per cent. better than any others, it is the "best" lens, but as to whether it would pay him to buy it at a much higher cost than its competitor is a question of which he alone must be the judge.

When a lens is advertised as "Universal" it is supposed by the public at large that it is suited for all purposes. What such a one can be I cannot imagine, as it has always been the aim of every prominent lens maker to produce lenses suited to certain purposes, and execute that particular work as well as possible. If such lens is found to be suited to other requirements it could be so stated, but I should be afraid that a "universal" lens would do a little of everything and excel in nothing. To the enlightened photographer very little caution is necessary, as he knows when he tests a lens as to what can be done with it, but it is the amateur who is caught by the many advertisements of the incomparable, universal, non-approachable, and many other incomprehensible terms applied by many as "sugar for the fly." Experience is an expensive teacher to some, but the solid, honest mode of dealing will always come to the front sooner or later. How many puffs of goods are purchased by presents of the articles to those who write the high sounding encomiums of them? I fear there are too many to begin to count them. And, so it goes, and as history always repeats itself, I expect it will go, and the "unposted" will pay the bills.

READER.

A NOVEL POSING CHAIR.

THE "Endean" patent posing chair claims the attention of progressive photographers as the most useful and necessary invention of recent years.

Its main feature is the combination of platform, head rest and chair, which enables the operator to handle his subject at will with the greatest of ease without having the trouble and annoyance of asking the subject to move after once being seated.

It is mounted upon a firm and substantial platform three feet in diameter, which runs upon two-wheeled casters and can be easily moved from one part of the studio to another. The seat is fixed on a spindle which fits into a hollow pedestal, so arranged that when the subject is seated the weight releases a brake below the platform which holds it in a given position and prevents the possibility of its slipping while stepping on and off.

The seat revolves easily, thus enabling the operator to place his subject in any desired position. Attached to the chair is a back support which can be adjusted to any position or taken down entirely when back views are required.

On the right of the seat is an adjustable arm rest to be used in sitting three-quarter figures, or as a seat for a child when taken with its mother. It is also used for sitting the child alone, in connection with an entirely new baby attachment The head rest is so arranged that it moves in a semicircle on the edge of the platform and can be fastened at any point.

The nickel finish given to the metal parts, the neat and tasty upholstering and general appearance, calls forth many expressions of admiration.

The inventor of this much needed combination of appliances has had many years' experience as a practical photographer, and has carefully considered all that was required to perfect the arrangements. He has spared neither time, study nor money to accomplish the present results. He now places it on the market knowing that it is perfect in every respect, and from the number of sales reported during the Convention it will be seen that the photographers of America have at once recognized the fact that it is an indispensable accessory.

Patents have been applied for in the United States and all foreign countries.

OUR ILLUSTRATION.

With this issue of the Bulletin we present our readers with some pictures made by one of our prominent New York amateur photographers. Glimpses of Switzerland are the results of his rambles through that picturesque country, and we are very much pleased to be able to give our readers an opportunity to see some of the beauties of that interesting locality.

THE N. C. THAYER PRIZE.

Chicago, August 20, 1887.

We the undersigned having been appointed a committee to award the two premiums offered by N. C. Thayer & Co. amounting to five hundred ($500) dollars, do hereby certify that we have examined N. C. Thayer & Co.'s books and find that Mr. H. I. Elliott of Marion, Iowa, is entitled to both premiums in accordance with the conditions of said offer.

L. H. Flershem, 92 Market street.
Mark Ayres, 149 Wabash avenue.

AIR BRUSH PRIZES.

First prize, one air brush and easel for best picture finished in black and white, awarded to W. H. Sherman, Milwaukee, Wis.; second prize, one air brush and easel for best picture finished in water colors, awarded to Madame A. Subit, St. Louis.

W. H. WALMSLEY & CO.'S PRIZES.

First prize, consisting of a No. 2 Beck Lens, with the new Iris Diaphragm, awarded to J. F. Ryder, Cleveland, Ohio. Second prize, consisting of a $60 Beck Lens fitted with new Iris Diaphragm, awarded to H. B. Warner, Holyoke, Mass.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

[*From the Art Amateur.*]

PHOTOGRAPHY WITHOUT A CAMERA.

BY GEORGE G. ROCKWOOD.

INTERESTING albums are made of prints of leaves of flowers, laces and similar flat objects, which are secured in the following simple manner: Take a sheet of sensitized silvered or blue paper and lay it upon a piece of glass. Place upon the glass the leaf or other object, and then over it, to hold it in place, another piece of glass, and at each corner a clip, or a common spring clothes-pin. Expose the plates so arranged, leaf side up, to the sun's rays. The paper will at once begin to darken, and in five to ten minutes, except under the leaf, be entirely black. If the plates are now taken into a dark room and separated, the image of the leaf, with its delicate tracery and beautiful lines, will be found upon the paper, white, with black background. It would be well to put under the sensitive paper a few thicknesses of soft paper, or black cotton velvet. It serves as a pad or cushion, and presses the paper into closer contact with the inequalities of the leaf, lace, or other object used as a negative. Small printing frames, which can be bought for a dollar or so, will enable the experimenter to examine the progress of the work and tell when the print has been sufficiently exposed. The exposure should continue until the image is much darker than it is intended to be when finished, as the after processes of toning and fixing weaken the color considerably. As the prints are taken out of the frame, put them away in the dark again until ready for the toning bath. Blue sensitized paper may be used in precisely the same manner. By its use one avoids the risk of soiled fingers and garments, which can hardly be avoided by the amateur in using the nitrate of silver paper.

EIGHTH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

HELD IN THE EXPOSITION BUILDING, CHICAGO, ILL., AUGUST 9-12, 1887.

First Day.—(*Continued.*)

IT was then moved and seconded that the report as read be accepted and placed on file, together with a vote of thanks to Mr. Gennert. The motion was carried.

Mr. GENTILÉ—*Mr. President, Ladies and Gentlemen:* By request of a number of photographers and stock dealers of Chicago, I invite you to an entertainment which will take place to-morrow evening, at 8 o'clock, in this building. A great many thought it would be advisable for us to take you to a picnic; but last year you were so well treated in St. Louis, that we thought we would give you something different this time. I do not know that we shall equal our St. Louis friends; at the same time the people of Chicago think they can never be downed by anybody from St. Louis. I certainly hope we will be able to treat you equally as well as you were treated in St. Louis. You are therefore all cordially invited, and bring your ladies if you are so fortunate as to have any.

The *President*—Mr. Gentilé, while I thank you on behalf of the association very much for your kind invitation, and those whom you represent, still I must say that I think there is a little rivalry connected with this, the old one between St. Louis and Chicago. Now we have already submitted that Chicago is away ahead of us, and I think this delicate question might have been avoided. We are glad to know that you appreciate the manner in which we received you in St. Louis, and I hope that all members will respond to the kind invitation you have extended to them on your part. I hope we shall have a pleasant time, meet together in a jovial way, which I may say is the great feature of our conventions, and aids the development of social intercourse among members.

Pardon me for saying one word at this time. It seems to me that the policy of receiving entertainments from local photographers will, in time, become a burden, and for that reason some members will not wish to have the convention held in their cities, because there are not enough resident photographers willing to contribute to a sufficient fund for the purpose of entertainment. I therefore hope that in the course of this Convention a motion will be made to the effect that we will not again accept anything of the kind; and that if we think it wise to have an entertainment, that the association provide the funds. For it must not be overlooked that we do not come together merely for professional purposes, but a great many of us consider it a recreation, the only recreation perhaps that we get in a year, and the only time we can get away from our studios and spend a few pleasant days freed from the daily cares of business life. I therefore hope that such a motion will be made during our sessions as will obviate this difficulty, by providing for an association fund for the purpose I have mentioned. If you read the German photographic journals you will see that over there they manage things on a very pleasant basis. They think the social feature is the main feature. The first meeting is usually in a pleasant garden, where they get acquainted and pass a pleasant social time together, smoking a good cigar or drinking a glass of beer, which opens their brains and their hearts before they commence work. I think the social feature of our association is well worthy of your fullest consideration.

Next in order is the appointment of a committee to name officers for the ensuing year, who are to report to-morrow morning. I will appoint on that committee J. F. Ryder, Cleveland, O.; S. L. Stein, Milwaukee, Wis.; C. Poole, St. Catharines, Ontario; F. W. Guerin, St. Louis, Mo.; C. W. Motes, Atlanta, Ga.

Next in order is the selection of the place in which to hold the next annual convention. This was placed on the first day's programme for the reason that it has been thought advisable to have certain officers in the same city for the better transaction of the business of the association. For instance, the Secretary, in my opinion, should be in the city in which we meet.

Mr. JOSHUA SMITH urged that Chicago be selected as the permanent place of meeting for the association. He thought if the convention was held elsewhere they would soon want to come back.

Mr. LANDY—Variety is the spice of life. I nominate Minneapolis.

Duly seconded.

Mr. GENTILÉ—Washington, D.C.

A *Member*—Denver, Colo.

Mr. RANGER—Rochester, N. Y,

A *Member*—Cleveland, O.

Duly seconded.

A *Member*—Detroit, Mich.

A *Member*—Philadelphia, Pa.

Mr. DECKER, of Cleveland, O., asked that the name of Cleveland be withdrawn. There were no facilities in that city for holding a large convention, and he could not conscientiously recommend its selection as the place of meeting.

It was moved by Mr. Cohn that the ballot on the question of the next annual convention meeting place be postponed until the next session, when there would be a larger attendance. The motion was seconded and carried.

The Convention then adjourned at 1.30 P.M. until Wednesday at 9 A.M.

Second Day.

Convention called to order by *President* CRAMER at 10.45 A.M. Reading of the minutes was dispensed with. A communication from the stock dealers was read, petitioning the association to hold biennial exhibitions. After some discussion the question was voted upon and lost.

The *President*—The next in order is the appointment of the Committee on Awards. The judges who are to award the prizes offered by the association have been nominated by a committee. Is that committee ready to report? The names are offered subject to your approval, and if any one has an objection to a name offered let the objection be stated, so that there will be no complaint hereafter.

The *Secretary* then read the following names: Dr. John Nicol, Chicago; Dr. Elliott, New York; James Inglis, Rochester, N. Y.; R. Goebel, St. Charles, Mo.; E. Long, Quincy, Ill.

Then followed a long discussion about the question of the mounts of two exhibits in the Art Hall, which was finally settled by the exhibitors complying with the spirit as well as the letter of the rules of the Executive Committee.

D. J. Smith, of Detroit, sent an appeal for help for Jex Bardwell who is destitute, and it was finally decided, by a unanimous vote, to present him with $100 from the treasury of the association.

The *Secretary* then read two cablegrams from the London and Provincial Photographic Society and from the Glasgow convention, sending congratulations, which were received with applause.

Dr. WILSON—*Mr. President:* I move that these communications from our brethren abroad be received with grateful recognition and spread upon the minutes.

I think it is unnecessary to reply, as the convention which sends it is now adjourned; but if we place upon our minutes our thanks, and our congratulations upon the growth of their body, it will be appropriate; also to add the hope that we may some day have an international convention and all meet together.

The motion was then seconded, and on being put to the vote was carried unanimously.

The *President*--Any more unfinished business before the house?

No response.

The *President*—The next in order is the report of the Committee on the Nomination of Officers.

Mr. RYDER—*Mr. President:* Your committee report that at a meeting in the parlor of the Palmer House, August 9, 1887, present Messrs. Ryder, Stein, Motes, Guerin, and Poole, the following nominations were made: for President your committee unanimously recommend C. T. Stuart, of Hartford, Conn.; for Secretary, W. H. Potter, Indianapolis, Ind.; Treasurer, G. M. Carlisle, Providence, R. I.; Vice-President, F. W. Guerin, St. Louis, Mo.; Second Vice-President, E. Decker, Cleveland, O.

Your committee also recommends, in view of the inadequate sum paid for the able services of the Secretary and Treasurer, that an increase be made to their salary.

These nominations were left to be acted upon on Thursday.

The *President*—Report of Special Committees is next in order.

Mr. DECKER—*Mr. President:* There was a committee appointed to make some recommendations in regard to the death of Mr. H. T. Anthony, or rather to recommend something to be placed on his tomb or in his former place of business. That committee met, and was composed of myself as Chairman, Mr. Smith, formerly of Peoria, and Mr. Gardner, of Ohio. We wish to recommend to this association that a bronze tablet with an appropriate inscription be furnished by this association, and placed in his former place of business, and I would like to make a recommendation in regard thereto if our report is received.

Mr. LANDY—Would it not be a good idea to specify an amount.

Mr. DECKER—I propose to offer that in a resolution which we have passed upon. We proposed it should be left to the Executive Committee at an expense not exceeding $150.

Mr. LANDY—The Executive Committee to take charge of getting up the tablet.

Mr. DECKER—The Executive Committee to take charge of ordering the tablet at an expense not exceeding $150. Your committee report that they would prefer the Executive Committee to get up the tablet, at an expense not exceeding $150, in the store of E. & H.T. Anthony & Co., in memory of Henry T. Anthony. If our report is received, I would like to make that motion.

Report accepted and motion carried.

After further discussion it was referred back to the Memorial Committee as follows.

Mr. RYDER—I move that this association appropriate $150 for this purpose, and that this committee be empowered to draw on the association.

The motion was seconded, and, being put to a vote, carried unanimously.

The *President*—Next in order is new business.

Mr. STAPLES—I came here, Mr. President, with one object in view, which was to bring before this Convention a subject which has never been brought up for discussion, which I regard as being of the greatest importance to us all. I refer to insurance on photographic galleries. We are now—all of us—paying the same rate of premium that we paid some ten or fifteen years ago, before dry plates were introduced; and we all know there is nothing like the quantity of inflammable material kept in a photograph gallery of the present day that there was ten years ago. Now if the photographers individually appeal to their insurance agents for a reduction of rates they laugh at them, but if this Convention will appoint an intelligent committee to wait on the underwriters in their convention and place this matter before them, I am satisfied they will recognize the committee and make a reduction of the rates on photographic galleries. I make a motion that a committee of three be appointed by this Convention for that purpose.

Mr. LANDY—I move the chair appoint a committee and name it to-morrow.

Mr. STAPLES—I also move that their expenses be paid by this association. Let them place the matter before the Underwriters' Convention and report at our next annual meeting.

Mr. STUART—I take great pleasure in seconding that motion.

Mr. EDGEWORTH—Can you tell us where the headquarters of the underwriters is?

Mr. STAPLES—I cannot, but the committee appointed will doubtless find out.

The *President*—It would be desirable to have the members of the committee conveniently situated as regards locality of the Under writers' Convention.

Mr. STUART—I can find out, for Hartford, Conn., where I live, is the great insurance center, and I am acquainted with all the insurance men.

Mr. POOLE—I think the question of expense should be secondary. You might get a man from the next house, another from the West, or perhaps get them both close together, and yet not have suitable parties for the work. I say appoint the best three men you can find.

Mr. EDGEWORTH—I think if the gentlemen will consult their companies they will have no difficulty. I do not have any trouble in Chicago in insuring photographic material inside our gallery at the same rate as dry goods. The photographers, as a rule, deal through agents, and if the agents are up to snuff they can look into this matter and assume gun cotton or the old collodion and alcohol is used; but if they find that has been abandoned they will charge no high rate. We cannot move our negatives and dry plates any quicker than a man can his dry goods. If, however, you are in some locality where they spring old rates on you, tell the agent that you will get your insurance through some rival, and if he sees your stock he will soon let up.

Mr. STAPLES—We do not all live in Chicago, and I have unfortunately resided in a great many cities North and South and have never yet been able to get insurance for less than double what is charged for any other line of business. I have been to three or four agents and talked on the subject with them, and they all coincided with me that the underwriters as a body would recognize us, whereas they would laugh at us individually.

The *President*—The question before us is to appoint a committee to confer with the Underwriters' Convention and get better terms of fire insurance for photographers, and that the expenses of such committee be paid by the association; that is, travel to and from the place in which the convention is held. Is that your resolution, Mr. Staples?

Mr. STAPLES—It is, sir; that the committee's expenses be paid, but have them show vouchers for such expenses.

After considerable discussion it was decided to appoint a committee of three to attend the National Convention of Underwriters, to endeavor to obtain a lower rate of insurance upon photographic studios. The President then named C. T. Stuart and H. S. Bellsmith on the committee, with Mr. Staples as chairman.

The Convention then adjourned until Thursday morning.

Third Day.—Morning Session.

Convention called to order by the *President* at 10 A.M.

Communication from the Texas State Photographers' Association was read, inviting members of the P. A. of A. to meet them at Dallas on October 27th next. Other minor communications were also read.

The *President*—Next in order is unfinished business, the first of which is "Amendments of the Constitution and By-Laws." Will the Secretary please read. All the members I presume are provided with proof slips of the revised By-Laws.

Mr. RANGER—I move that they be read as they now stand, and that discussion follow afterwards.

Seconded and carried.

The *Secretary* then read the revised Constitution and By-Laws as adopted by the committee, which, after a few unimportant amendments, were adopted unanimously.

The *President*—This will be our Constitution and By-Laws from this day on, and we will be governed accordingly. Next in order is the report of the Committee on Awards.

Dr. ELLIOTT—I would simply state, Mr. President, that we are now at work upon this business, and cannot report fully until to-morrow morning. The chairman is not present, and I therefore make this statement.

Mr. RYDER moved that further time be granted the committee.

Seconded and carried.

The *President*—Next in order is the report of special committees. We have not yet received the report of the committee to select a place in which to hold the next annual convention. Is that committee ready to report?

Mr. Ranger—No committee has been appointed. The place of meeting is to be decided this morning by vote of the Convention.

Mr. Ryder—*Mr. President*: As one of the Committee on Nominations yesterday, I wish to say that after making the nominations we recommended an increase in the salaries of the Secretary and Treasurer, which are quite inadequate. I notice that this thing has been passed by, which is a very pleasant way of getting rid of it. It is of importance however that we should have a Secretary and Treasurer to serve us who are thoroughly competent. It is also necessary that they should be paid enough to interest them in their work. The present compensation is inadequate and poor. For the purpose of accomplishing that, I would ask you, Mr. President, for a reconsideration of the two sections concerning these salaries.

The *President*—In order to avoid any long discussion of the subject, it will be well to vote on the actual question to which Mr. Bellsmith made an amendment which was carried, so that the question now before the house is that the By-Laws be accepted as they stand.

Mr. Edgeworth—Now I think Mr. Ryder is in order.

Mr. Ryder—The amendment I desire to make is to Sections 3 and 4 of By-Law 3, which relates to the compensation which the Secretary and Treasurer shall receive for their services. The figure here is given as five per cent. I would move, Mr. President, to insert "ten" for "five."

Mr. Bellsmith—I wish to remark that this simply applies to the future officers—the present incumbents are not to be benefited.

Mr. Edgeworth—Some of us are in the dark as to the amount which five per cent. represents. It may mean $300 or $500 or $3,000.

The *President*—The Secretary can give us some explanation.

The *Secretary*—Last year the five per cent. amounted to $205, or about that. This year being an extremely good and prosperous year, it may possibly reach $350. Two years ago I think it amounted to a little over $150. When the expenses are deducted, however, a man comes out about fifty dollars ahead for his year's work.

Mr. Clark, of Indianapolis—I wish to make a few remarks concerning this matter. My only object is for the good of the association. It is all very well because we have a good man to give him an office, but we have another thing to look out for, and that is the general good of the association. We have had in the past year a Corresponding Secretary, a Local Secretary and a Treasurer, all receiving pay from this association. I think that the offices of Secretary and Treasurer should be combined in one, and not a percentage, but a stated salary be paid to the office-holder, so that he will know what he gets, and that we pay sufficient to get a good man, and let him attend to the work, for what is everybody's business is nobody's business. I would like to know what objection there is to this suggestion.

Mr. Bellsmith—I can explain the objection. It is absolutely impossible for one man to perform the duties of Secretary and Treasurer. In the first place the Treasurer at convention time goes into the Treasurer's office and remains there from half-past seven in the morning until four or five in the evening. Mr. Carlisle this year has not had a chance to come out even to get his dinner. As Secretary I have had to attend committee meetings, look after the stock merchant's department, make out and collect the accounts, and it has kept me up to one or two o'clock in the morning to do my writing. Any one who attempts to run both offices will make a failure of it. I think, however, one good idea would be to combine the offices of Secretary and Local Secretary; then there would be no division of authority, and assistance could be obtained to lighten the duties connected with the offices.

Mr. Clark, of Indianapolis—I can see no objection to combining the two offices at the present time. By employing assistants the work could be done.

Mr. Gentilé—I am perfectly satisfied that there is more work than three men can get through during the convention, therefore it is useless to give it to one man, unless you give him proper assistance, and you certainly will have to give him sufficient compensation to pay his assistants. The work has to be done in a very short time during the convention week, and what with the exhibitors and dealers it is impossible for one or two men to attend to it.

The *President*—I would like to say that we have learned by experience that it is well to have the Secretary in the city in which the convention is to take place, so that he can arrange matters beforehand, and save an immense amount of trouble. Does any one else wish to say anything else on the present motion, which is to change Sections 3 and 4 of

Article 3 to read "ten per cent." instead of "five per cent.?"

There being no response the President put Mr. Ryder's amendment, which was seconded and carried unanimously.

After some discussion the Constitution and By-Laws as printed on page 503 were unanimously adopted.

A discussion then took place in regard to the petition of the stock dealers to hold the meetings of the association biennially. Being put in the form of a motion it was lost, and the association will continue to meet annually.

The *Secretary* then read a list of entries for competition for the silver medal to be awarded by the ballot of the members for the best improvement in photographic apparatus, etc.

Mr. CLARK, of St. Louis—I would like to say, when you are giving out so many medals, I think some provision ought to be made for a recognition of the bromide prints. There is a very large display here, and I think we ought to encourage and stimulate the exhibitors of them. I think there should be a medal or prize offered for the best bromide print.

The *President*—The question now before the house is to postpone the awarding of this prize until to-morrow.

Seconded and carried.

The *President*—Next in order is the selection of the place in which to hold the next annual meeting.

After much discussion it was finally decided as follows.

Mr. RANGER moved that the Secretary be empowered to cast the vote of the association for Minneapolis as the place in which to hold the next annual convention.

Motion seconded and carried.

The *President*—The Secretary has cast that vote, and Minneapolis has been selected as the place in which to hold our next annual meeting.

The next subject in order is the election of officers. I hope you will all remain and vote, so that we may have the sentiment of the association, and not that of a few members.

It seems to me that we should not adjourn to-morrow without having had a practical discussion. For my part I should dislike to see the association adjourn without having had a discussion of some practical value to the profession. I would like some member to make a motion that we hold a special session this evening for the purpose of disposing of the papers named in the programme, as well as affording opportunity for discussion of the same.

Mr. EDGEWORTH—I make the motion suggested.

Seconded and carried.

The *President*—The election of officers is now in order. The first is the President. Charles Stuart, of Hartford, Conn., has been nominated for the presidency. Any other nominations are now in order.

Dr. Wilson nominated George Barker, of Niagara Falls.

Mr. BARKER—I wish to decline that nomination. I cannot accept it, but I thank you, gentlemen, very kindly for the nomination.

Dr. WILSON—It is only his modesty, Mr. President. I move Mr. Barker take his seat.

Mr. BARKER—*Mr. President and Gentlemen:* I would like your attention for two or three moments to one or two important points that should be considered in choosing your officers. I do not wish to be understood as casting any reflections on any of the candidates already named, or may be named, for appointment. I merely wish to remark that I think it should be the aim of the association to bestow the honors on those who have earned them by faithful service and life-long devotion to the advancement of art, and placing this association where it most unquestionably stands, and which can now call together in the short space of one year a display of artistic photography which cannot be equaled in any other country upon the face of the earth. We have among us one who is especially eligible for the high position now to be filled, and believe all who know him will agree with me; one who is a good and reliable man, and an honorable man; one of whom it may be said that in honoring him we honor ourselves. In mentioning that candidate during the past day or two in the convention I have heard the question asked, Where is he from? This, gentlemen, should not be. The question is not whether the candidate is from the mighty State of Texas, the baby State of Rhode Island, or the great Empire State of New York. This is the Photographers' Association of America. We have no north, no south, no east, no west, and should bestow the honors without regard to locality, and only where the honors are due. The matter came up yesterday, and was mentioned to-day in regard to making our meetings biannual instead of annual. We should meet in two states every year; and I would suggest to the photographers here to write them down and paste them in their hats—the states of harmony and prosperity.

I take pleasure in nominating as candidate for the presidency, Mr. W. V. Ranger, of Syracuse, N. Y.

The President then placed the nomination before the Convention, and it was duly seconded.

Mr. DOWN—I want to place in nomination a man who has done more for this association, in my opinion, than any other man we have on the roll. At a time when it was in the death throes of its existence he was elected to minor office, and through his indefatigable energy and valuable services it was placed on the solid foundation where it now stands. That man is entitled to the highest honor we can bestow. I place in nomination Henry McMichael, of Buffalo, N. Y.

Seconded.

Mr. BELLSMITH—I nominate Mr. E. Decker, of Cleveland, O.

A *Member*—I second that nomination. I believe he is a man who will represent us splendidly; one who is foremost in all work for the good of the fraternity; and if there is honor in these offices, I believe in distributing them. He is a man whom we are all proud of, and will do honor to the position of President of this association.

Mr. CLARK, of St. Louis, moved that the nominations be closed.

Seconded and carried.

Several ballots were then taken and the results were stated by

The *President*—According to the vote cast I declare Mr. E. Decker, of Cleveland, O., duly elected President of this association. I appoint two ex-Presidents as a committee to conduct Mr. Decker to the platform.

On motion of Mr. Bellsmith the Convention adjourned until 7.30 P. M.

Third Day.—Evening Session.

The Convention was called to order at 7.30 P.M.

The *President*—We have appointed this evening for the purpose of practical discussions, so that this Convention will not adjourn without having considered matters of practical importance. We commence with a paper by Dr. Elliott, entitled "A Search for a Substitute for Hypo."

Dr. ELLIOTT.—This paper is somewhat technical. It is quite scientific in its language, and for that reason I will not burden you with the whole of it. It is quite lengthy. I will simply give you the gist of it now, and when it is published you will be able to read it more understandingly. It is something that has occupied my attention during the past year in what time I could spare from my other labors.

[Dr. Elliott then read his paper. See page 459.]

Mr. LANDY—I move a vote of thanks be tendered Dr. Elliott for his very able paper.

Seconded and carried.

The *President*—Mr. Ryder will now read his paper entitled "Killed by Over-dosing" [See page 519.]

Mr. GENTILÉ—I move a vote of thanks be given Mr. Ryder for his valuable paper.

Seconded and carried.

The *President* then introduced to the Convention, Mr. Decker, President-elect, and said: *Ladies and Gentlemen:* I have much pleasure in introducing to you your newly elected President, who will now direct the affairs of the association, and will take charge of its glorious banner. I know he will fulfill all your expectations, and I commend him to your consideration.

Mr. DECKER—*Ladies and Gentlemen:* I have to thank you for a very unexpected and entirely unsought for honor, for I do consider it a very great honor indeed to be elected to preside over this association for the coming year. I cannot of course expect to fill the office in such an admirable manner as the present occupant, or those who have preceded him, and I must ask your forbearance towards me in my efforts to discharge my official duties. I may say that towards the other gentlemen who were candidates for the presidency I have the kindest feeling, which I hope is reciprocated, and I wish to assure them I would have been better pleased if one of them had been elected instead of myself. I believe this is understood to be an entirely business session, so I will not detain you a moment longer, except to add that it is my earnest hope that we may have as great success in the future as we have had in the past.

The *President*—In electing Mr. Decker as my successor, I believe you have acted wisely, and could not have made a better choice. And now I wish to say that in retiring from office I shall endeavor at all times to do my utmost for the welfare of the association, and I thank you most heartily.

I will now proceed to read my paper, which is almost a supplement to that which has been read by Mr. Ryder, and agrees with the ideas which he advances. It is entitled "On the Treatment of Very Sensitive Plates." [See page 518.]

Mr. BELLSMITH—I move a vote of thanks

be given Mr. Cramer for his very able paper.

Seconded and carried.

Mr. INGLIS—While it is very interesting to hear the papers read, would it not be well to devote a little time to discussion? It will give a little life to the session, and perhaps result in more practical good. These papers, while all valuable and interesting, will be published in the journals. I have no doubt many members have questions to ask, and should have an opportunity to do so. I therefore move that we spend half an hour in that way.

Seconded and carried.

The *President*—That was the object of reading the papers, to induce discussion. If any members have questions to ask, now is the time.

Mr. CROSS—I wish to say this one point on the matter of development. The use of alkali is well understood, its nature and proportion, and of the developing power of pyro, that has all been talked about. But one feature, I think, has not been dwelt upon sufficiently, and that is, the intensifying action of sal soda, which is an intensifier just as much as your pyro is, up to the fogging point, and just as powerful and more so. That is what I wish to emphasize. Up to the hazing point it is more powerful than pyro itself in giving density. If you look upon the pyro as a density-giving agent it is not, unless it is the neutralizing agent of the sal soda. You must have the energy to produce that before you get the action. A variety of substances produce new results, consequently you do not want to consider your pyro as a density giving agent. Sal soda is, for it is just as much so as pyro up to the hazing point, and is a beneficial one, except where you have under-exposure. You can gain density and save pyro by using the maximum quantity of sal soda up to the hazing point.

The *President*—Do any of the members wish to express themselves on the subject under discussion, the development question? I would say for myself, in regard to Mr. Cross' remarks about using too much alkaline solution, that it causes a haziness of the plate, and if you "over-dose" (as Mr. Ryder calls it) it will produce fog. In winter you can use more alkali than in summer, owing to the temperature. If you wish to ask any questions on the subject, now is the time.

Mr. INGLIS—For the benefit of the photographers, I would ask Mr. Carbutt to give a few points upon the use of a cold developer in summer. You refer to it in your paper, Mr. President, advising a cold developer.

Mr. CARBUTT—On what particular point do you wish information?

Mr. INGLIS—On the point you spoke about this evening: change of temperature, changing from a low temperature to a high one causing frilling.

Mr. CARBUTT—Many photographers have received instructions that in warm weather they must use their solutions as cold as possible. Now there is one degree of cold to which you can go with safety, under the conditions that the other solutions should be as nearly as possible of the same temperature. It is not right to reduce the temperature in your developer to say forty or fifty degrees, and immediately after development pass your plate into a solution eighty or ninety degrees. Gelatine is very susceptible to heat and moisture. When in a moist condition you suddenly change it from a cold solution to a warm, its nature is to expand very quickly, whereas, if the conditions were such that you could control the temperature so that it would not vary more than probably ten degrees, I believe that a great many failures that those using gelatine plates usually attribute to the plates, would be attributed to themselves in making the change from one to the other of the solutions. Now it happens that I am blessed with an abundant supply of cold water, having an artesian well. Many times during the summer I am in receipt, as I suppose all plate makers are, of complaints that such and such a number of plate will not work, that they frill all to pieces. When those plates are returned to me, I try them under the conditions that I have at my factory, and do what I can I cannot frill them, because the solutions that I use are all of an equable temperature. The water running into my dark room is not over 60 degrees; it comes from my well at 52 degrees.

I will relate an incident showing the effect on plates in development. A plate that I make for a special use among photographers is called a stripping plate. I was making some last week, and before sending them out, as is my custom, they were put under treatment with alkaline developer, and it was impossible to keep the film on the plate; it would frill as soon as it got from the developer and went into hypo that was standing from the previous night, and was warmer (probably seventy degrees), the film would begin to loosen and come right off. I tried putting it into a solution of sulphate of magnesia before developing, and that helped it some, but not sufficiently, and then I returned to the same emulsion coated on the same day on the ordinary plates, and found it went through all the conditions of fixing and washing without the disturbance of the film, and that set me to thinking that it was not in the emulsion, but the tendency of the film to loosen if the conditions they are worked under are not suitable to them. I then gave my attention to the ferrous oxalate developer, which is of an astringent nature. As I said, the first batch of plates treated with ferrous oxalate developer went through the operation perfectly; had no sign of disintegration whatever; and it was owing to the warm condition of the atmosphere in Philadelphia, where it was raining at the time, that the film under the conditions could not stand the alkaline developer when it would the astringent ferrous oxalate.

To return to the conditions of temperature. It is in summer that those using gelatine plates should particularly consider their nature, and endeavor to make the conditions of temperature as equable as possible. One of the worst things you can do in summer is to make the first solution you use as cold as possible, without any regard for the future water the plates go into; there is where the difficulty lies. If your developer is 60 or 70 degrees, the fixing bath the same, and the washing water of no higher temperature, I do not believe you will have any trouble. If you take your plates out of the washing water, however, and hang them up in an atmosphere charged with moisture, they will have a tendency to soften, and some will be wrinkled, but if you use the alum solution between the development and fixing, that will not occur. I think that is all I can say on this subject. I am now ready for any further questions.

Mr. FILLBERGER—I would like to ask some of the members who are acquainted with chemical action, to give us a little explanation as to how the pyro is a builder of the image, and the alkali an accelerator, etc., and also give us the action of the sulphite of soda, which has been ignored to-night.

The *President*—It seems to me that this should be well known, having been so extensively treated in the journals, and published in the directions for plates. You speak of the intensifying action of the pyro, of the accelerating effect of the alkali—is that it? The effect is that pyro alone will not develop a plate at all. It requires to be rendered alkaline to act upon a sensitive film. Now it takes a certain quantity of alkali to start the working condition and to bring it up to its full power, and if you add an over-dose it results in haziness first, and if you add still more, in fog.

Mr. FILLBERGER—You do not understand me; I refer to its chemical action.

The *President*—The chemical action of a concentrated developer is to produce a denser image?

Mr. FILLBERGER—How does it do it?

The *President*—A precipitate obtained by mixing concentrated solutions will be of a coarse and dense nature. If you mix dilute solutions you will get a fine precipitate. So does the concentrated developer reduce the silver contained in the film in a more coarse and dense state.

Mr. FILLBERGER—That is the point I wanted to ask. What is the image built up with, with pyro?

Mr. CARBUTT—The member wants to know whether oxidation or precipitation takes place. It is the reduction of bromide of silver to silver which takes place in the film. The pyro reduces the silver bromide to its metallic state, and that is the actual action of the developer.

The *President*—Now I will speak once more of the advantage of a cold developer in summer; I do not mean to have it ice cold. I prepare the alkaline solution just strong enough for winter use, and in summer I dilute it with an equal quantity of ice water (I suppose you all have a water cooler). Just take an equal part of the alkaline solution and ice water, and you will have the right temperature for summer use. You will find that it works finely. In a hot climate, where there is danger of frilling, I would recommend not to wash it too much after developing, nor to let a stream of water run on it with full power. Leave the plate in a dish, change the water a couple of times, and then pass it to the hypo solution. A danger of frilling can be avoided by using a strong dose of alum in the bath, as much alum as hypo. The alum will tan the gelatine until it is almost as hard as solid leather after it is thoroughly fixed; so hard that you can hardly scratch the film off the glass with your finger-nail.

A *Member*—Does it throw down a deposit?

The *President*—Such a bath with a large amount of alum will naturally fix a little slower, but it will be an advantage to leave the plate in it a little longer, because the film will be rendered more insoluble thereby. If you leave the plate in a sufficient time, you can take it out and wash as long as you please. It will be hard enough to stand the water in any climate, even in tropical countries.

Now the question about the precipitate. If solutions of alum and hyposulphite of soda are mixed, a precipitate is formed of sulphur and alum. This ought to be allowed to settle, and the solution should be clear before using it. I find a solution of bicarbonate of soda of benefit to prevent further precipitation. I use for instance two pounds of hypo and half a pound of bicarbonate of soda dissolved in one gallon of water. Then I mix the two solutions together and have two gallons of fixing bath. This addition of bicarbonate of soda seems to keep the solution clear longer than without the addition.

A *Member*—Sulphite of soda?

The *President*—Well the sulphite of soda is added to the developer only for the purpose of preventing yellow coloring. It also has the beneficial effect of preserving the pyro from decomposition. Pyro is a substance that has a great affinity for oxygen. An aqueous solution of pyro will soon decompose, as the pyro absorbs the oxygen which is contained in the air and water. The addition of sulphite of soda will retard this decomposition, because it has a great affinity for oxygen. Besides this beneficial effect of preserving the pyro from decomposition, it also prevents the yellow color which would be produced if pyro and alkali were alone used. Pyro, with sal soda or carbonate of potassium, without sulphite will make negatives as yellow as a lemon. If you add it you will observe the yellow color decreases in the same proportion as you add more. If you add a large amount, say ten parts to one part carbonate of soda, you will have little yellow color, if any, but get a gray negative that resembles the collodion negative of former times. This, I think, fully explains the action of the sulphite of soda.

In my paper I have drawn your attention to the difference between granular sulphite of soda and sulphite of soda crystals. The granular is about twice as strong as the crystallized, because the crystals contain almost an equal quantity of water of crystallization. That is the reason why crystallized sulphite of soda is, when kept in a warm room, found to contain a sufficient quantity of water to dissolve it when warm. This change to the liquid form is not a sign of deterioration. If the temperature lowers again it solidifies to a solid lump, which renders removal from the bottle difficult. I have only mentioned these facts to show that it requires twice as much sulphite of soda crystals as the granular. The same may be said of the carbonate of soda (sal soda). It comes in several forms. The dried is a fine powder, more than twice as strong as the crystals.

A *Member*—I have a question to ask. I have for some time past been using dry pyro instead of dissolved. It is recommended in the formula, and I find it of advantage, especially during warm weather, when it is hard to keep pyro dissolved without deterioration, and I think it also has a tendency to work brighter than dissolved pyro. I would like your opinion.

The *President*—I will soon answer that question when I come to it. Let me first conclude my remarks in regard to the strength of the different carbonates. Carbonate of potassium has not the same strength as dried soda, and you make a mistake if you substitute one ounce of the former for one ounce of the latter.

A gentleman asked if it is not an advantage to use dry pyro instead of in solution. It is so used by many operators, but the solution is more convenient and accurate. I have found from experience that sulphurous acid is the best preservative for pyro. I have prepared solutions of pyro in water, with the addition of several acids to note their respective preservative qualities, and have put them on the shelf for a long time. After a couple of months I found all the solutions changed materially. The one with sulphurous acid kept best of all. I have found that it is not easy to get sulphurous acid in any drug store. I found when we got sulphurous acid from one of the drug stores it had no odor at all. Sulphurous acid should have a very strong odor, the same as that of a burning match. I recommend you to prepare it yourself, by simply taking a small quantity of sulphite of soda and a certain quantity of sulphuric acid. I will describe the action. If you add sulphuric acid to a solution of sulphite of soda you will find that at first there will be no odor perceptible, as sulphite of soda contains a small amount of carbonate which has first to be neutralized before any sulphurous acid is liberated, which manifests itself by the peculiar odor already described. I recommend the following solution:

Sulphite soda...........	I dram.
Sulphuric acid..........	16 minims.
Water....	6 ounces.
Add, when dissolved, dry pyro	I ounce.

A *Member*—Is there any objection to the dry pyro?

The *President*—Only that it is inconvenient. There is another thing that I would like to mention. The sulphite of soda that you get from the drug store is often almost worthless.

I find that even the manufacturing chemists are not careful enough in preserving it. It ought to be kept in close vessels, so that it is not in contact with the air. But the manuacturer keeps it in an open barrel, the dealer n an open box. It may be decomposed beor e you get it. It should be perfectly fresh, otherwise it will not have the desired effect.

A *Member*—I use my pyro dissolved in alcohol. It keeps very well and gives quite a nice effect.

The *Iresident*—Alcohol is a good preservative, but you will find the solution I have mentioned just as good.

Mr. Barker—You have alluded to the different strength of different samples of carbonate of soda. I think more trouble has arisen from a want of knowledge of the strength of the different forms that are put up than anything else. I find that in some galleries they use common washing soda (sal soda) in large crystals, and perhaps another gallery is using it chemically pure. Another uses the granular form. Now that form is put up by several druggists, and we have no knowledge whatever or means of knowing how much water is driven off.

The *President*—I can tell you that. The chemical purity of sal soda is not identical with its freeness from water. You can have dried soda chemically pure, and crystallized soda chemically pure. Chemical purity signifies absence of foreign substances.

A *Member*—I am speaking of very fine powder.

The *President*—That is the dried carbonate of soda of commerce. It is not perfectly anhydrous, or free from water, as it contains one molecule of water. The crystallized carbonate of soda contains ten molecules of water, and sixteen parts crystallized carbonate of soda are equivalent to about seven parts dried carbonate of soda. The granular carbonate of soda contains as much water as the crystals, and only differs from the latter in form.

Mr. Hall—I think you are mistaken, Mr. President, in that matter, for this reason: If there was no water driven off, it would naturally run together into lumps more than it does. If you look in the pharmacopœia you will see that sal soda, or carbonate of soda, will take up ten molecules of water. The molecular weight of carbonate of soda (anhydrous) is 108. It takes up ten molecules of water to form crystals. At 95 degrees of heat it will part with sixty per cent. of water. I suspect the sort of granular state you speak of has received that treatment. The question is: In this granular soda that you speak of as being put up by the chemists, how much water is driven off? You think none. I think there must be to keep it in that condition.

The *President*—I have it from good authority that the granular carbonate of soda contains as much water as the crystals and differs from it only in form.

Mr. Cross—To return to the subject which was mentioned before—in regard to various kinds of those different forms of soda. I do not want to be considered a heretic. I want simply to give my experience of a very careful test, and while I must unquestionably admit that all the facts, theoretically and chemically, are against it, there is no question at all in my mind about the predominance of power to the ordinary sal soda crystals. The power is simply wonderful as compared with the other The reaction is tremendous, when you make a careful test. Try it once, just taking pound for pound in water.

One little point, the action of the sulphite of soda, that I have had experience with this summer. I should like to have others avoid it if they can. I mention the result. I mixed sulphite of soda with pyro, and calculated it to keep about five weeks in warm weather. I have known that to fail inside of ten days, mixing it at the rate of one ounce of the sulphite to half an ounce of pyro. The sulphurous acid that Mr. Cramer produced by his chemical reactions will preserve the pyro no doubt, but I must correct the impression that sulphite of soda is a preserver of pyro. It don't by my experience.

Mr. Landy—I think it would be very interesting and instructive if some gentleman would give us some information about the development of bromide paper now. Perhaps Mr. Inglis could give us some points about the production of those beautiful pictures.

Mr. Inglis—Although I made those bromide pictures which are on exhibition, and am manufacturing the paper, I must say that I have had but very little experience in the making of those pictures which have attracted the attention and appreciation of this association. I might also say that I am as green, in fact much greener, at it as many here present. I have had some little experience, running probably over four or five months, and in that time I have changed my mind very considerably. While you were speaking about the strength of the carbonate of soda, it was running through my mind how differently I arrived at what you seemed to be trying to get at to-night, the particular strength of the solutions with which you were going to develop your plates. It is not a very scientific way that I go about my work I grant you. I generally do it by the rule of thumb, and if I find the solutions too strong and indicate that they are going to over-dose the picture or plate, I very quickly change to that which something innate directs me to do. That is the way I work as a rule. But, regarding what I was going to say. In the development of these bromide prints I do very much the same way. I can look back when I first began to do it, about four or five months ago, and see how I laid down a particular and minute development whereby to produce best results. I have found after that experience that I am coming back to my old original way of working. Almost undoubtedly I have laid aside these fine minute quantities. I go according to what I see the particular piece of paper demands, whether it be stronger or weaker. I do not expect all of you are going to do that, for each one of us has our own individual way of working. We produce our individualities, as a rule, upon the work we turn out.

While I give a formula for one to produce the bromide pictures, I would add that I deviate very wonderfully from it. If I find that a picture on starting gives me the impression that it is going to be flat, I try to hasten the development as quickly as possible to get strength into it. By doing that I get a greater contrast, and do away with the flatness it would otherwise have. You can only arrive at this by experience. While I consider it an exceedingly simple operation to develop the bromide prints, I must say this—before I proceed, let me speak as to what I recommended to some, and wrote letters accordingly, when I commenced making this paper, to the effect that I could give from one to ten (a great latitude you note) in the exposure, and produce a picture which you would not know if I gave it one second or one minute, ten seconds or ten minutes, one to ten. Now I have changed considerably from that. While there is considerable latitude, I recommend, with all my power, just to expose as near as possible to the right thing every time. The best results can only be obtained when the exposure is very correct. I would like to emphasize, I do not claim for the paper I am now manufacturing any great degree of latitude in the exposure in the hands of the general man. While a good expert may get it under control, I recommend none to play with it in that way if they want good results.

In winter, when I first began to experiment with the bromide paper, I developed all the time with pyro and soda, and obtained as beautiful tones and results as I can possibly get now with the oxalate developer. Since warm weather commenced I find I can get no results with the pyro and soda worthy of being looked at. The pictures are anything but clear, and are quite yellow and dirty in appearance. This is not the case with the ferrous oxalate developer, which I would therefore recommend, in summer at least. I am in hopes that before another year passes this bromide paper will be brought to such a degree that it will not be despised; that instead of it being only a foundation for the artist to finish in crayon or Indian ink, we shall be able to produce pictures having all the finish of those of crayon or Indian ink.

While I should like to give as much information as possible, you must accept very little, from the fact that I have been engaged in the business such a very short time. If any questions could be put directly, it might aid me, and perhaps bring out a little more than I am able to think of at the moment.

Mr. Cooper—I would like to ask Mr. Inglis his manner of building up a bromide picture that seems to be coming up flat.

Mr. Inglis—I think I stated that if the picture indicates that it will be flat I strengthen the developer to its utmost power by adding as much iron as the oxalate of potash will hold short of precipitation. It seems to make the deposit much more rapid, and gives a brilliancy which otherwise there would not be. If you use a very weak developer it has a tendency to induce softness and flatness, while if you use a very strong one you get strength and vigor. I must say, from experience, I have not found the latitude in the oxalate developer that I have in the pyro and soda. I might also add the addition of bromide of potassium to the developer will help to restrain development and allow more brilliancy to come into the picture.

The *President*—Mr. Cooper will now speak about bromides.

Mr. Cooper—I do not know that I can say anything which to the majority of you will be new. I have been trying, to the best of my ability, to exemplify practically what I have to say to you to night, and I doubt if I can convey in words any more forcibly than I have done in deeds, what I have been able to show you. The matter of developing bromide paper is of course something that is to be taken into consideration only as regards the particular paper to which you refer.

One paper requires one treatment, another different, as is the case with the dry plate. While formulas of almost any kind that are at all suitable for one plate may in the hands of a skillful operator be successful with almost every other plate, it is not to be expected that any formula will act in the very best possible manner on the general run of plates in the hands of anybody. That is simply impossible, and it is foolish to expect it. Bromide papers differ as plates differ. At present, however, fortunately or unfortunately, there are not a sufficient number of samples of bromide paper on the market to make the comparison so broad that we can be entangled in describing what is what for one and the other. I have had a little experience in the use of bromide paper which I do not think necessary to state here. I have also had a little experience in my acquaintance with photographers, and know what they want. I think I do, anyhow. And it has been my privilege to learn from them that it is latitude that they desire in their plates, and consequently I have inferred that the same quality in anything else that they handled would be acceptable. With that object in view I have concluded it would be best to provide them with something in the way of bromide paper which would be satisfactory all around, just exactly in the ratio that they expect from their plates. I believe, in other words, that to make a man a successful commercial operator in bromide paper (that is the average man), you must provide him with something which enables him to have some latitude in his work. This should be within certain limits, I would say almost so that it is impossible for him to make a mistake. That sounds rather strange, and if I had not succeeded in demonstrating it here I would not like to make the assertion now. But I think there are at least thirty gentlemen who to-day saw me make one print in forty-five seconds, well timed, another of the same negative in one minute, just timed, and another in two minutes with the same light and the same developer, and on the same paper, so that you could not tell one from another. Then I went in inverse ratio. You would suppose I began by timing forty-five seconds first—I do not do anything of the kind; I used new developer and began on the two minutes' exposure. I used the same developer for the one minute and the 45 seconds exposures. Thus I worked the wrong way according to theory, but it is a fact. I think there are some gentlemen here who would be willing to back up my statement.

Mr. Bellsmith—When you say you used the same developer, do you mean the same portion or the same formula?

Mr. Cooper—The same as I used on the first print exactly; and that is where the point comes in. I used the same solution for all, and if any gentleman will call on me to-morrow I will convince him. He may bring me any negative he likes, and I think I will prove that I can make a good print from it. That is, as good as a negative can be expected to make on first trial.

Mr. Esterbrook—Do you use the fresh developer on the shorter time?

Mr. Cooper—No, sir; on the longest time. Just reverse the operation.

The *President*—Do you recomend that, or did you only try it as experiment?

Mr. Cooper—I first of all developed for instruction. I then subsequently showed what could be done in the hands of someone who was working and knew what he wanted to do. Every man gets what he wants to after he makes up his mind he knows what he wants, that is all. The development of one bromide print requires new developer every time. The development of another will be far better if you use always a little of the old with the new. Why? Because one is made according to a certain formula, and another a different one. You all know perfectly well that in the use of the oxalate developer with the old in the new, the second development was better than the first; in fact as you went on the second and third would give more brilliant results, and it was always advisable to use a little more of the old with a little of the new. I am well aware that long development with some paper will give yellow prints, with others it will not. That is all I have to say. If any gentleman wishes to ask any questions I am ready to answer them.

Mr. Esterbrook—I would like to know why you reverse the ordinary mode of procedure. Give us your reasons. In developing the accepted method is to commence at the shortest timed. Now you have reversed it, and we would like to know why you do it, and the theory.

Mr. Cooper—There are some things we know, and yet cannot describe how they are done. For instance, a man may turn a somersault because of his predominance of muscle in a certain direction; I could not tell you where, or how to do it. If you practiced you could do it yourself. This is simply one of the gymnastics of bromide work. I do not mean to suggest that every man should work that way. Let him reverse the operation and begin on the longest time with the old developer, and with the new on the shortest.

Mr. ESTERBROOK—For the benefit of the photographers here, I would ask the question: With some bromide paper, very lengthy development will make it yellow. Is it in the paper, or in the particular development?

Mr. COOPER—I am a little disposed to believe in the paper.

Mr. INGLIS—Will Mr. Cooper state any paper that he has seen that way.

Mr. COOPER—I won't do any such thing, and advertise any brand of paper.

Mr. INGLIS—No, I do not mean to advertise any brand of paper. I ask it because I have not seen it. It is new to me. As I have already stated, I am new in the business, and I have not seen any of it, though I have tried different papers; but I have found a particular developer to produce yellowness while another development of the same paper would stand fifteen minutes without showing the slightest change of color so far as I could detect.

Mr. COOPER—The question resolves itself into this: Yellowness is what, in the whites?

Mr. INGLIS—In the whites.

Mr. COOPER—Well, that is exactly what I am referring to, and there are occasions when it is particularly apparent, in others it is not. In the majority of cases the yellowness results from very long development, and is generally where a print is so much under-exposed that it requires forcing, and the operator naturally goes so far as his iron—that is one to six or one to four—allows him, and then after that a little more iron and so goes on until he reaches a limit where the iron is precipitated and falls on the paper in the granular form, and looks and indicates itself very plainly. There is a point where precipitation begins to take place without your being able to see it. If you use your graduate you will see after a while that it has become coated with a very fine and slightly opaque deposit, the granuler oxalate of iron, which falls when you overdose, by making a combination of solutions of more than one to three. That is, I think, the explanation. Where it has been forced in long development, and gained a point where more iron was put in than the developer can reasonably carry.

Mr. TEMPLE—I want to know if any of the workers in bromide paper have tried the pyro developer in place of the iron developer, and with what result.

Mr. COOPER—I think I stated that very distinctly.

Mr. TEMPLE—I was not in the room at the time.

Mr. COOPER—When I began making the bromide paper last year I used that and produced as beautiful tones as I have done with the ferrous oxalate, but since the warm weather commenced I have failed with the pyro.

Mr. TEMPLE—The reason I ask the question is this. I had occasion to make some opals the other day, and I had not made any since the old process, and at the request of the stock dealer in my city I tried opal plates, and made up the developer according to the formula published, and I secured very good opals. I simply tried the ordinary pyro developer, as used in ordinary work, and it developed without any trouble at all. Supposing that the opal in the paper and that on the dry plate amounts to about the same thing. I imagine that the pyro developer should work as well on the bromide paper as the oxalate does, and I would like to know if any one has tried it.

Mr. GENTILÉ then read his paper on "Advertising and Prices." [See page 492.]

Mr. LANDY moved a vote of thanks be tendered Mr. Gentilé for his valuable paper, which was carried.

Mr. POOLE—I would like to say something about prices. The matter of low prices seems to effect not only photographers in the United States, but in Canada also, and much from the same cause. However, our association came to the conclusion that talking was very well, but to act a great deal better. I am sorry I have not something here to show you that we did, but will exhibit three cards to-morrow which we had printed and secured good results. As secretary of our association I was instructed to have a maroon card printed in bronze, urging the public in nice wording to this effect: That the craze for low prices led to the purchase of poor, cheap materials, and also to the employment of poor assistants, and two or three other causes, and that the public did not get what they expected. Our object was this, to let the public know that their craze was bringing bad results on themselves, as they were not getting as good work as they supposed. Now, if you can get the public to see it in that light, you have accomplished your end. I suggest our plan to you. We took the trouble of sending one of these cards to every photographer in Canada. Most of them have had them mounted and hung conspicuously in their studios. When a customer comes in he is naturally attracted, and reads it, and begins to say, "What is the meaning of this?" A reaction is coming.

The *President*—Our worthy ex-President, Mr. JOSHUA SMITH, will now read a paper giving the result of his trip to Europe. [See page 521.]

Dr. ELLIOTT moved a vote of thanks be given Mr. Smith for his paper, which was seconded and carried.

Dr. WILSON moved adjournment, which was carried, and the Convention adjourned until 9.30 Friday morning.

Fourth Day.

The Convention was called to order at 10 A.M.

The *President*—Are there any communications to be read?

The *Secretary* announced that the paper contributed by Mr. C. E. Von Sothen had not been read, and moved that it be received and published in the journals, with a vote of thanks to the writer. [See next BULLETIN.]

Seconded and carried.

The *Secretary* then read a paper contributed by Mr. F. C. BEACH, of New York, entitled "Bleaching Bromide Prints" [see next BULLETIN], after which Mr. Landy moved a vote of thanks to Mr. Beach for his contribution, which was seconded and carried.

The *Secretary*—I should state that Mr. Beach sent with this paper a number of specimens. The subject which he has discussed is a very important one, and I have no doubt if photographers would extend their experiments in that direction very valuable discoveries would ensue. The making of prints for newspaper illustration is becoming very popular, and the demand is increasing for some means whereby reproductions from photographs can be obtained in a short space of time. The specimens referred to have been placed on exhibition.

Mr. LANDY moved, that in consideration of the small space of time now left for business, that all papers be received as read, and afterwards published.

Motion seconded and carried.

The *President* announced papers contributed by Mr. John Bartlett, of Philadelphia, on "Intensification of Gelatine Negatives with Nitrate of Silver, Gallic Acid, and Perchloride of Iron;" also papers by Messrs. Clark, Frith [these papers will be published in next BULLETIN], and Croughton [see page 488].

A vote of thanks was unanimously tendered to the above-named gentlemen.

The *President* expressed his regret that, owing to the length of the discussions on general business, the bad acoustics of the building, and limited attendance of members, more practical discussions had not taken place, and urged that in future the meetings be devoted entirely to practical questions, for it was for that alone that most of the members came together.

The *Secretary* then read the following:

1210 CHESTNUT STREET,
PHILADELPHIA.

Mr. President, and Members of the P. A. of A.

I respectfully suggest that a prize be offered by this association for improvement in printing on albumen paper or a substitute. It must supply a more rapid process in a subdued or artificial light with equal or better results. The present waste in time and material is very large, on account of the imperfections of paper. We want something to overcome all this I ask for a committee to consider this matter at once.

A. K. P. TRASK.

The *President*—The next in order is the report of committees. Are any committees ready to report?

The *Secretary*—On behalf of the Committee on the Death of Mr. Gifford, I move that a resolution expressing our sorrow at the death of our esteemed and worthy brother E. A. Gifford, of Vermont, be published. He was a man of high standing in the profession, and respected by all who knew him; a genial friend, and a true gentleman. I move that a committee be appointed to draw up such a resolution, and that a copy of same be forwarded to his family.

Seconded and carried.

The *President* then appointed Dr. E. L. Wilson as a committee to frame the resolution.

Next in order is the election of officers. We have elected our President, and in this connection I again invite Mr. Decker to come forward and say a few words for the benefit of those members who were not present yesterday evening.

Mr. DECKER—I presume most of the members who are present this morning attended the session last evening and heard my remarks. I can add nothing further. I can only say I thank you for the great honor you have conferred upon me, and will endeavor by all the means within my power to prove that it has not been misplaced.

The *President*—We will now proceed to the election of the first Vice-President.

Mr. RYDER—As one of the Committee on Nominations under the old Constitution, I announce the following nominations: for First Vice-President, F. W. Guerin, of St. Louis, and Mr. Decker for Second. The latter gentleman being President, another nomination is required for Second Vice-President.

Mr. BELLSMITH—I place in nomination Mr. C. W. Motes, of Atlanta, Ga.

Mr. POTTER—I put in nomination for Vice-President, Mr. Rugg, of Minneapolis.

Mr. LANDY then moved that the election proceed by ballot, which was seconded and carried.

The *President*—Are the scrutineers present who acted yesterday? Further nominations are now in order.

Mr. GENTILÉ nominated Mr. Brush, of Indianapolis, after which, on motion of Mr. Landy, the nominations were closed.

[The ballot was then proceeded with.]

The *President*—It is understood that the gentleman who receives the majority of votes shall be declared First Vice-President, and the next Second Vice-President. The ballot is now closed.

After a count had been made, Mr. Poole announced the following result: Mr. Motes, 58; Mr. Guerin, 55; Mr. Rugg, 44; Mr. Brush, 26.

The *President*—You have elected Mr. C. W. Motes, of Atlanta, Ga., as your First Vice-President, and Mr. Guerin, of St. Louis, as Second Vice-President. We will now proceed to elect our Secretary. Nominations are in order.

Mr. DECKER nominated Mr. W. H. Potter, of Indianapolis.

Mr. CLARK, of St. Louis, moved that Mr. Potter be declared elected Secretary by acclamation, and that the Secretary cast the ballot in his favor.

Seconded and carried.

The *Secretary* then cast a ballot [for Mr. Potter.

Mr. POTTER—I thank you, gentlemen, for this unanimous indorsement, for such compliments are not always received during a lifetime. I had made up my mind that if any one was nominated in opposition to me I would heartily support the nomination. I accept the honor you have conferred upon me, and can assure you that I will do all in my power to labor for the interests of this association.

The *President*—The election of Treasurer is next in order.

Mr. LANDY nominated Mr. Carlisle.

Mr. POOLE moved that the Secretary cast a ballot in favor of Mr. Carlisle.

Mr. BELLSMITH nominated Mr. Poole, of Kansas City, for the office of Treasurer.

Mr. POOLE—I most emphatically decline the honor, and in declining wish to say I hope you will nominate Mr. Bellsmith.

Mr. BELLSMITH—I decline also.

The motion was then carried, and the Secretary cast the ballot in favor of Mr. Carlisle.

Mr. RYDER—I wish to announce that under the old Constitution and By-Laws, which died yesterday, we had a Vice-President for each State. Under the new ones that is abolished, and we have no more Vice-Presidents of States.

The *President*—You will understand you have elected Mr. W. H. Potter, Secretary, and Mr. G. M. Carlisle, Treasurer, and that, according to the Constitution, you have elected a Board of Trustees, which our charter calls for. The President and First and Second Vice-Presidents constitute that board. For the information of members who are not aware that we are an incorporated society, I would exhibit this charter, which states that we are incorporated under the Laws of the State of Illinois. [The President here exhibited charter.]

We will now take up any unfinished business. It seems to me that the Blair Cup matter should be brought before the association now for settlement. Can the Secretary explain?

The *Secretary—Mr. President:* You have asked me for an explanation concerning the Blair Cup. I would say that Mr. Blair presented the matter to the Executive Committee, and asked them to take it in hand and decide the manner in which it should be disposed of. The Executive Committee determined that it should be necessary for a competitor to win it twice, and that the competition should be conducted thus: The committee shall name a subject this year that shall be used for illustration in the production of a picture to be brought here next year and entered for competition for the cup, and the best illustrator of that subject should be awarded the cup, and the winner be its custodian until the next convention. If at the end of three years it has not been won twice by the same person, it shall revert to the association and become its property, to be disposed of as may be desirable. After that decision was arrived at there was some question as to how it should be placed in competition this year, as no subject had been previously announced. The committee finally decided to allow the present Awarding Committee to present the cup to the competing exhibitor having the finest single photograph, without distinction as to style or class. The winner shall hold the cup until next year, and the subject for next year's competition be announced to-day.

The *President*—The Secretary will please read the regulations regarding prizes, as we have them on file.

The *Secretary* read the rules, also those regarding the disposal of the Blair Cup.

The *President*—I would ask the Secretary to add a supplementary resolution, that for the first year it will be awarded to the best picture exhibited, so as to settle all doubts about it for other years. Is the Committee on Manufacturers' prize ready to report?

Mr. LANDY—The whole number of votes cast is 244. Cooper's enlarging camera received 133, a majority vote, and gets the silver medal.

Mr. POTTER suggested that prize winners give receipts for their prizes, so that there would be no doubt about their receiving them.

Mr. POOLE asked if all members making out receipts would get medals. If so, he would make out a dozen right away.

Then followed a long discussion to limit the expenses of the Insurance Committee, and a motion to that effect was lost.

The *President.*—The Committee on Awards is now ready to report.

Dr. NICOL—Mr. *President*: The judges appointed have carefully examined the pictures on exhibition, also carefully studied the instructions given them, and announce the following result. [See page 488.]

I am instructed by the judges to say that the exhibit of Mr. Ryder would have entitled him to a gold medal, but he is ruled out in consequence of having been awarded one last year.

Mr. Jackson was also debarred from a gold medal this year, because he received one last year. It is therefore awarded to the next competitor in excellence to Mr. Jackson, Mr. Burnham, of Chicago.

One word, in order to prevent our friends from coming to us and inquiring about the decisions and how we arrived at them. There are two things I wish to tell you. First, that the committee had not one single difference of opinion from beginning to end. We varied a little sometimes, but generally kept most harmoniously together. Second, we have made a solemn oath, and mean to keep it, that under no circumstances will anything more be told than what I have already stated. All the papers are destroyed, the figures have gone with them, and we ourselves have forgotten all about it.

Mr. POTTER—I move that the report of the Awarding Committee be received, and a vote of thanks tendered them, and that the committee be now discharged.

Carried.

The *President*—Of course the awarding of prizes naturally gives rise to a certain amount of irritation and unfavorable comment as to the decision of the judges. But if it cannot be managed without this dissatisfaction I think it would be well for the association to grant no more prizes in future. One word I will say, and that is, I have by all the means in my power tried to arrange this matter of prize giving to suit the wishes of a majority of the members of the association. We have all tried to do this, and if our efforts have failed, I would beg of you to arrange to have no prizes next year. I wish to see the first man who will come forward and say I have done anything to his disadvantage in this respect.

Mr. DECKER—Right here I would like to ask for some suggestions for my guidance in my official capacity, and also for that of the other officers. Personally I am averse to awarding prizes, but would like the expression of the association on the subject.

Mr. MARCEAU—I think as all the older members have exhibited and most of them been rewarded, it would be wrong to abolish the practice. It will be well to continue it, so that the younger members should have a chance to win some laurels.

Mr. POTTER—I agree with the gentleman, and think it would be well to continue the practice.

Mr. BELLSMITH—I move that $1,000 be appropriated for medals at the next convention.

Motion seconded.

Mr. RYDER—I think every deserving exhibitor should have a medal. We should distribute a dozen, or even two or three dozen, so as to please everybody. I offer this for your consideration. For my part I have retired from the medal business and from further contests, and am content to stop now.

Mr. BELLSMITH—I think Mr. Ryder has very good reason to be content, but there are struggling, aspiring photographers who would like to have the same chance as he has had to gain prominence and success.

Mr. Bellsmith's motion was then put and carried.

Mr. DECKER—I would like to ask if competitors receiving a gold medal this year will be debarred from receiving one next.

Mr. BELLSMITH—I move that all restrictions be abolished, so that each man exhibiting will stand on his own merits. I make a motion that this barrier be removed.

The *President* then put the motion to remove the restriction, which was carried.

There is now the subject of the unawarded medal before us. What shall we do with it?

Mr. CLARK—I move that it be left over for another year.

Motion seconded and carried.

The *President*—It seems no more than right that we should pass a vote of thanks to Dr. Elliott for serving on the Committee of Foreign Exhibits. It is due to him that we have these fine pictures on exhibition.

A motion to that effect was then seconded and carried.

Mr. JOSHUA SMITH—I rise to speak in the interests of this association. Minneapolis being so far north, many of the stock dealers are considering the advisability of attending the next convention. I therefore move that the Minneapolis meeting be an entirely practical, business one, and that all photographs exhibited be limited to six. We want some photography. It will be better for the awarding committee, better for everybody, to have the number limited.

Mr. LANDY—I second Mr. Smith's motion, which is very much to the purpose.

The *President*—There is only one suggestion I would make, Mr. Smith. If a man cannot exhibit more than six pictures, he may have his printer, operator and assistant operator send in six apiece.

Mr. SMITH—I have been very sorry to see such a mixed collection of photographs as there is in this building. I suggest that the Executive Committee next year appoint a Committee of Art to examine every picture entered for competition, and if they put their veto on any one let it be excluded. My motion is to limit the pictures exhibited by any one party to six. If the operator wants to make an exhibit he can, provided he is a member of the association. This will obviate the necessity of having a great building for our meetings. I further move that next year's meeting be confined exclusively to practical photography, for we have only had one session of real importance here, and that was on Thursday night. I would say that I was present at the British association's meeting in London last year, where I exhibited. All the stock I saw was one or two cameras, and they with the exhibits were all on one small table 40 x 80, and the members' exhibits were scattered promiscuously, and the judges had a much easier time deciding what was what.

Mr. BELLSMITH—I rise to perform a decidedly pleasant and agreeable duty. After the battle is over and the smoke has cleared away, good feeling will return. Let us go away with a natural feeling of peace and good-will. I probably have been as active in discussion as any one, and have no reason to regret my action, but I can assure the gentlemen who have opposed me that I have nothing but the kindest feeling towards them.

I take great pleasure in handing to Mr. J. Landy, of Cincinnati, the trophy which has been presented to this association by Mr. T. H. Blair, of Boston, a trophy that has been won upon the merits of a single picture, containing in itself a conception of beauty and grandeur that I think has hardly ever been equaled or excelled in the world as a photographic production. I think, Mr. Landy, you may well be proud of this beautiful cup, and trust that you may be enabled to retain it.

Mr. LANDY—I thank you, Mr. Secretary, and appreciate the liberality of Mr. Blair. When I came here I did not expect to win the trophy, but since I have done so I will try to do something that will enable me to win it again, although every member has the same chance. I trust it will be the means of stimulating competition for this handsome prize, which I hold for one year.

The *President*—Mr. Smith's motion is now before the house.

Mr. SMITH—It was not my intention to allow an exhibitor to compete with six portraits, six landscapes, etc., that is for the Executive Committee to decide. It is only limiting to six in any one class.

Mr. Smith's motion was then seconded and carried.

Mr. SMITH—I now move that we make the next meeting a thoroughly practical one. I have no doubt the majority of photographers attending these conventions thirsting for photographic knowledge will appreciate it. I understand the stock dealers have presented a petition to the association asking that the meetings be held biannually, which was lost. I respect the stock dealers and manufacturers. I was at one time a committee to solicit funds for the benefit of this association from them, and I know it has been a great burden to them. I therefore move that we omit the stock department at the next convention, except something may be introduced which shows progress. It should be a very small affair, and not require more than twenty-five feet of space.

Mr. RANGER—I would make an amendment, that the Executive Committee be governed by circumstances at the next meeting. I hardly think it would do to determine that now.

Mr. RYDER—Just a word. I do not think it right to debar the stock dealers from coming. Courtesy alone demands that we invite them. We are useful to them, they to us. If any of them are enterprising enough to come to Minneapolis, by all means let us make matters pleasant for them. I offer an amendment, that no provision be made except for those who desire to come.

Seconded and carried.

The *President*—I wish to say a word in regard to Brother Smith's remarks. I have tried my utmost to get matters in such a shape that we could proceed to practical discussion, but it has been impossible. Owing to the large size of the hall, the stock dealers' department, and surrounding attractions, it has been difficult to get members together. For this purpose I called that evening session. I think it would be well before final adjournment to hold a practical discussion session, either this afternoon or evening.

Mr. GREEN—I move that we meet this afternoon for practical discussion.

Seconded and carried.

Mr. SMITH—I wish to say that any remarks I have made had no reflection on the integrity of the chair. He has done his duty thoroughly, but circumstances over which he had no control have caused the trouble.

The *President*—There is a matter yet to be disposed of. We have adopted a Constitution and By-Laws, and it will have to be printed. A motion to instruct the Secretary to have printed a number of copies will be in order. Before that motion is made I would like another to be made, that our very good co-worker in Europe, Dr. Eder, be added to the list of honorary members. I do not see his name on the list, and if any one is entitled to the honor, he is. The Secretary should also be instructed to inform him of his election.

Mr. EDGWORTH—I make a motion to that effect.

Mr. POOLE—In view of the world-wide reputation of the gentleman named, I take great pleasure in seconding the motion.

Carried.

Mr. LANDY moved that the Secretary be instructed to have printed 5,000 copies of the revised Constitution and By-Laws, and that a copy be sent to each member of the association, honorary and active.

Seconded and carried.

Mr. GENTILE moved a vote of thanks be tendered the press of Chicago for the very generous way in which the meetings of the association had been treated.

Seconded and carried.

Mr. LANDY—Before we adjourn, I move that a vote of thanks be tendered to our very efficient President, Mr. Cramer.

Mr. POOLE—In seconding that motion, I would say: Of all men whom we have found here acting as presiding officer, President Cramer alone knows when he makes a mistake, but that when he does make one, some of the happiest results take place. I have great pleasure in seconding the motion.

The *President*—Before you put the question I want to say a word. I simply accepted office on your urgent request, and with great reluctance. I felt it my duty to serve the Photographers' Assocociation of America, to which I owe all my progress. I accepted the office, knowing it would be extremly difficult for me to perform the duties connected with it, but I have earnestly tried to do what was right and make this Convention a success. I am very sorry that any one should go away from here dissatisfied, for some disputes have arisen in spite of all my precaution. If however you blame me for any apparent weakness manifested you do me a great injustice. I know I have made many mistakes in the matter of parliamentary government; I was perfectly well aware I would make them, and have never claimed to be efficient in that respect. But I have profited by these proceedings. For instance, I have learned a word from our esteemed Canadian brother that I never heard before and shall never forget, "scrutineers." Thus I feel that all this trouble and labor has not been undergone for nothing. I have improved, gained experience, and am your obedient servant, G. Cramer, forever.

Mr. LANDY—It is moved and seconded that a vote of thanks be tendered our very effective and sincere President.

Carried.

Mr. BELLSMITH moved that the medals be distributed at the afternoon session.

Seconded and carried.

The Convention then adjourned until 4 P.M.

The Convention assembled at 4 P.M., and was called to order, but, owing to the very small attendance of members, it was considered inadvisable to continue the session.

The *President* therefore announced the Convention adjourned *sine die*, and the meeting of 1887 came to an end.

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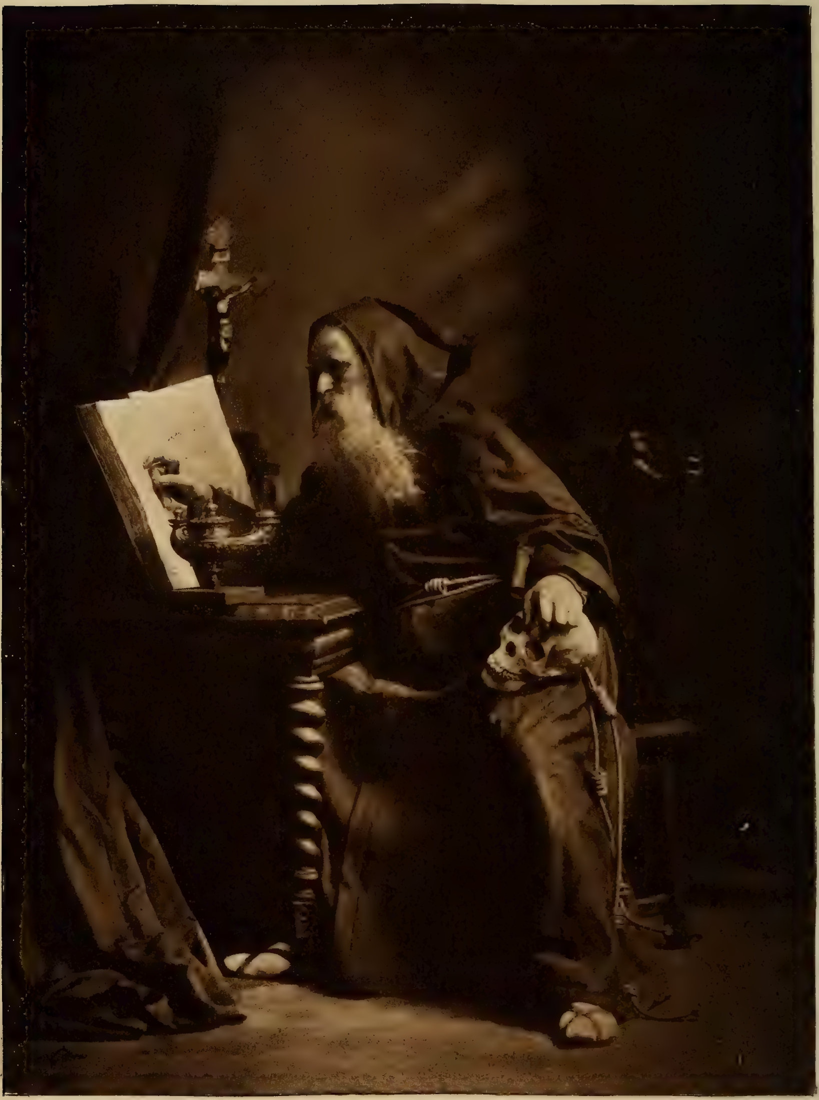

MAN, KNOW THY DESTINY.

BY J. LANDY—CINCINNATI.

PHOTO-GRAVURE CO., N. Y.

PICTURE AWARDED THE BLAIR PRIZE CUP AT CHICAGO CONVENTION, 1887.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

SEPTEMBER 24, 1887. Vol. XVIII.—No. 18.

THE OUTING OF THE NEW YORK SOCIETIES.

THE elements were never in a more propitious mood than on that beautiful day, September 3d, when the Annual Field Day and Dinner of the United Photographic Societies of New York took place. The preceding day was ominous and dark and promised little of a favorable character in a photographic way for the day following. But as nature is somewhat capricious this year, and often goes against her accustomed rules, she concluded to give us a clear and handsome photographic day, and morning dawned on the day of the photographic societies' reunion with as fine a face as has ever graced a dawn this summer. As far as the eye could reach every object stood out in clear cut lines that charmed the most ardent landscape artist. No mists hovered near the waters, and every detail of objects, even close to the horizon, was clearly defined and in good form for the lens to capture. It truly seemed as if all nature had agreed to give us a perfect photographic day and let us revel in her beauties. The beauty of the scenery on that morning was such that one might well exclaim:

> "Who can paint
> Like nature? Can imagination boast
> Amid its gay creation, hues like her's?
> Or can it mix them with that matchless skill,
> And lose them in each other, as appears
> In every bud that blows?"

Yet with all the painter's skill to-day, photography is most true to nature and her moods, for, except the color, our art catches every line and curve of beauty with far greater precision than the hand of the most skillful artist.

All those who went with the gay party that were aboard the steamer Blackbird on that September morning thoroughly enjoyed themselves, and it will be many a day before such a charming trip will be made as that taken by the photographic societies in their cruise in New York Bay and up Long Island Sound to Glen Island.

Starting from Franklin street at nine o'clock in the morning, about ninety members of the two societies, the Photographic Section of the American Institute and the Society of Amateur Photographers of New York, took a cruise together around the lower bay of New York, along Staten Island and Bay Ridge shores. With something like forty cameras on board and a large stock of dry plates, together with an uncommonly fine day, we expect to see some handsome

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pictures caught by the way. The Statute of Liberty never looked better than on that lovely morning and many a plate received a lasting impression of her. The various steamers and sailing craft, the pretty sloop yachts and schooners scudding along under a capital breeze, afforded excellent material for hundreds of shots with detective and other cameras. Each one that carried a camera with a shutter seemed determined to

"Eye nature's walks, shoot folly as it flies,
And catch the manners living as they rise."

For not only on the boat, but after the arrival at Glen Island many a shot was taken of scenes and events that will give some interesting pictures.

Armed with a little 4 x 5 Novelette camera carried in the hand, and with a Grunow shutter, we made a number of shots at passing craft and also of pretty little bits of scenery on the island. While engaged in this occupation, and in company with another member of our party, a policeman came up to us and said that we must not take any photographs on Glen Island. (*Sub rosa,* we had exposed eleven out of twelve plates.) To this we remarked that it would be folly for a photographic society to come to such a place if it could not take pictures. But the minion of the law was obdurate, and in spite of many pleadings and remonstrances (in order to gain time for our companion to expose all his films, he being unobserved) he would only reply, "Thim's me orders and I can't let yer do it nohow." So we silently folded our camera and placed it in its leather case, with the consciousness that we had only one plate unexposed, that our companion had used all his sensitive surfaces upon the objects we should have liked to get, and that we could obtain prints of them.

It appears that this prohibition of photography at Glen Island is a regular rule, but that did not apply in our case; and the fact that we were stopped was owing to the policeman not having received the necessary orders, a matter that was after rectified, the whole party having special permission to make all the pictures they wanted on that day. One of the members, whose name we do not now remember, happened to come along with his detective camera, and got a shot at the big policeman and ourselves in the argument about the permission. We hope our good friend will favor us with a print from that negative.

After the light became too weak for photography, the whole party sat down to a clam bake at the island. Not out upon the ground where ants crawl all over one, but served comfortably in the handsome dining-room. It was a truly fishy dinner, but many of us liked it. There were a few members who had never eaten clams, and probably never would have done so but for this outing; but the trip on the Sound, the bright, life-giving sunshine, and the encouragement received from those who love the bivalves, gave them a keen appetite, and they soon overcame any other considerations and began to believe the shell-fish worthy of a higher regard than they had hitherto awarded it.

At seven o'clock we left the island, after a day filled with pleasure; a day that gave new life to many a weary one; a day that was as near perfection as could well be made for photography; and, taken all in all, giving an amount of real satisfaction that has not been experienced on similar trips for many years past. But after leaving Glen Island another and equally as enjoyable an entertainment was gotten up rather impromptu on the boat. Mr. Bloodgood H. Cutter, the Long Island poet, gave us a poem upon the uses of photography in perpetuating history, and Miss Hellenbeck charmed all by her singing. Miss

Corbett gave us a very pretty recitation called "The Auld Black Shawl," which was very happily rendered; Mr. Kerigan sang "Good-by Sweetheart, Good-by;" Mr. William Jessen, formerly leader of several German singing societies, sang an exceedingly pretty Swedish song, in a voice that captivated all who heard him; and Colonel V. M. Wilcox, one of our publishers, sang an old song with chorus, in which all joined with hearty good-will.

Among those present were W. Irving Adams, of the *Photographic Times;* Dr. E. L. Wilson, of the *Philadelphia Photographer;* Dr. O. G. Mason, of Bellevue Hospital, Mrs. Mason and Miss Mason; Henry J. Newton, President of the Photographic Section of the American Institute, and Mrs. H. J. Newton; Dexter H. Walker, President of the Society of Amateur Photographers; G. R. Allerton, Edward Leaming, Dr. L. H. Laudy, J. B. Gardner; Dr. P. H. Van der Weyde and Mrs. Van der Weyde; T. C. Roche, George H. Ripley; Mr. and Mrs. Flammeng; Thomas Stevens, the world-renowned bicyclist; J. Trumbull Smith, Secretary of the American Institute; E. B. Barker and Mrs. Barker; C. Van Brunt, of the New York Microscopical Society; Dr. J. J. Higgins, F. T. Zabriskie, L. H. Horgan; D. R. Garden, of the Polytechnic Society; John T. Granger, Secretary of the Society of Amateur Photographers, and a large number of others.

Altogether the reunion must be pronounced a decided success, not only in the matter of the day's enjoyment, but also as indicating a mutual good feeling among the professional and amateur photographers of New York. There is a talk of having a mid-winter reunion on the same basis, and we sincerely hope the programme will be carried out. There is much to be learned by the members of both societies by this mutual association, and we have often thought and advocated in these columns just such a course of procedure as is now being talked about. Let the good work go on and we shall do all we can to favor closer union between our professional and amateur friends.

EDITORIAL NOTES.

We are indebted to Messrs. J. G. Ramsey & Co., of Toronto, for early reports of the Toronto Convention of the Canadian Photographic Association, a digest of which will be found upon another page.

We note that the managers of the Canadian Industrial Fair in Toronto have awarded a number of medals to amateurs for photographic work. Mr. E. R. Parkhurst got a silver medal for portraits and another for landscapes. Mr. F. Manchee, of Toronto, got a silver medal for bromide prints; Mr. Marklem, of Chippawa, got a silver medal for interiors; Mr. Hugh Neilson, of Toronto, got a bronze medal for bromide prints and another for interiors. Among the other exhibitors were Messrs. Roderick Mathewson, Moodie, J. G. Ramsay, Percy Bath, and Charles Wagner.

Now that the Chicago Convention is a thing of the past, and all the smoke of conflict has cleared away, there is one figure that stands out in bold relief for firmness of purpose, honorable administration, and generous laboring for the good of the association, and that figure is Gustave Cramer, of St. Louis. Amid all the turmoil of those excited meetings, he stood out for what he believed to be just and honorable, and there is not a shadow upon his administration from beginning to end. Let us hope that the Photographers' Association of America will always get men as whole-souled and as willing to work for it as the man that held the reins at Chicago.

As we go to press we get our "English Notes" from Talbot Archer. Being just too late for this issue we shall be obliged to leave them for the next number of the BULLETIN.

IN a recent number of *La Nature* is an interesting article on the photography of sensitive flames in connection with the timbre of sound. It would appear that by some method of this kind we may ultimately obtain a photograph of a man's speech.

IN a letter to *La Moniteur de la Photographie* Professor Borlinetto, of Padua, writes about the taking of pictures by means of explosive powder, after the method of Gädicke and Miethe with magnesium mixtures. He says that he published in 1867, in the Parisian journal *Les Mondes*, the use of a mixture of picric acid and chlorate of potassium for this purpose, the color of the light being bright white with a tinge of blue. This observation, made twenty years ago, caused him to try the experiments again recently, and with six grams of the mixture he has obtained portraits that were over-exposed, the combustion moreover taking only a fraction of a second. As the mixture is explosive, the ingredients, in a finely powdered condition, should be kept in separate vessels until required for use. This picric acid powder is much cheaper than that of magnesium, and appears to work as well.

THERE will be an exhibition of the Photographic Society of India, at Calcutta, in January, 1888, open for three weeks. Pictures must be in the hands of the Secretaries, J. S. Gladstone and A. Flemming, 8 Clive street, Calcutta, before January 1st next. Expressage must be prepaid, and instructions as to sale of pictures must be given. Pictures winning medals become the property of the society. The following medals will be open for competition.

Class 1.—Open to the world.—His Excellency the Viceroy of India's own special medal and the society's gold medal for the best photograph in the exhibition. A silver medal will be held at the disposal of the judges.

Class 2.—Open to the amateurs of India.—Silver medal for best photograph in the exhibition. Silver medal for best set of not less than four photos. A silver medal to be at the disposal of the judges.

THE PICTURES AT CHICAGO.

SECOND NOTICE.

THE various collections of cabinet pictures were some of the best work in this style of photographic portraiture we have ever seen. Among the best of these we noted the work of G. L. Temple, of Clinton, Ia.; E. Poole, of St. Catherines, Ont.; and C. C. Urlin, Columbus, O. These were probably the finest cabinet photographs in the exhibition, and were studies in modeling and fine work upon this every-day class of pictures. We cannot help thinking that this class of pictures should be a permanent section of the exhibition, competition being capable of doing more for these pictures than any other class in photographic portraiture.

The wonderful genre pictures of Mr. G. B. Wood, of Philadelphia, claim a word in passing. In a large collection, mostly $6\frac{1}{2}$ x $8\frac{1}{2}$, there was not one that lacked artistic feeling and did not at the same time have a motive. It is really wonderful to see the art put into these photographs, and yet we are sorry to say the exhibit had not many admirers, possibly because they were not as brilliant prints as many of the other pictures exhibited; but the art in them should have captivated many of the photographers at Chicago.

George Barker, of Niagara Falls, always gives an exceedingly handsome exhibit, and that at Chicago was no exception. A large number of beautiful views of Florida scenery were the admiration of crowds of the members of the association. But the *chef d'œuvre* of the exhibit was that wonderful 17 x 20 instantaneous picture of "Berlin Winning the Horse Race at Niagara Falls." This was a picture that fairly took your breath away to look at, it was so realistic. The effect of action in the horses; the wonderful profile view of the winning jockey's face as he looks back to see how much he has won by; the uplifted lash of the second horseman; the clouds of dust following the horses feet; the life-like attitudes of spectators, all go to make up a picture of most marvelous beauty. We think it will be a long time before another such a picture is obtained where so many things give it such a life-like character; it seems as if one was looking through the print at the very race itself.

And here we must not forget to mention those wonderful Western pictures of W. H. Jackson, of Denver, Colo. There is no American, and probably no other photographer, that has such a keen eye for those grand and glorious Rocky Mountain scenes as Mr. Jackson. It is impossible to describe his wonderful productions, and those who see them are fascinated with their wild beauty to such a degree that they stand in mute admiration before them. The rugged rocks; the snow-capped summits; the far-reaching plains; the forests on the slopes; the herds of cattle, all in a grand picture, without a trace of indistinctness, and with a tone admirably suited to each particular scene, gives a beauty to these productions that to-day are unrivaled in American landscape photography.

In marine views J. S. Johnson, of New York, had a number of handsome yacht and steamer pictures. The views of the Brooklyn Bridge and East River, New York, were exceedingly fine.

We cannot close our notes of the American pictures without a word upon the wonderful exhibit of photographs of machinery shown by L. C. Overpeck, of Hamilton, O. There is no more difficult work placed before the photographer than these complicated masses of metal with their varied combinations of brass and polished steel. In Mr. Overpeck's work we noted an amount of clear, sharp and accurate photography that would delight the eye of the most critical mechanic, and it was certainly the finest set of pictures of the kind we have ever seen.

Now for a few words about the foreign exhibits. The number of these was not as large as in former years, but the beauty of the pictures left nothing to be desired. Oscar Suck, of Karlsruhe, showed eighty pictures of Bavarian peasants in their native costumes. These were all gems of fine modeling, excellent artistic effects, and some of the most beautiful toning we have seen for some time.

Schmidt, of Frankfort, had a very handsome exhibit, but with nothing remarkable or worth unusual study in it.

Teich-Hanfstangl, of Dresden, showed a number of large, finely executed photographs, exhibiting beautiful effects in modeling, and very agreeable tones in the prints.

D. Anderson, of Rome, Italy, had a large handsome print of the Roman Forum. This picture was about two by four feet, and remarkably sharp and clear in every detail of that wonderful piece of achitecture. It was undoubtedly the finest piece of architectural work that has appeared in the exhibits of the association for many years.

Besides these pictures in the Foreign Department, there were several that arrived too late for last year's exhibition at St. Louis, and were placed on the stands at Chicago. These were pictures of Swiss scenery by Herr Peitsch, Chur, Switzerland, which were very beautiful; and also a number of pretty views by J. Pike, of Newcastle, England. Both these exhibits were well worthy of study and had many admirers at Chicago.

These are the pictures that pleased us most at Chicago. There were a host of other good examples of fine photographic work, notably the handsome exhibit of Mr. Cramer, which was not for competition; also the various bromide prints and enlargements, of which the exhibition was rich in fine examples. But our limited space precludes any further extended notice, and our friends that we have failed to notice must not feel badly, for although our spirit is willing, space, and a press of other matter, prevent our saying more about an exhibition that was replete with a host of lessons to every progressive photographer. We will only add, next year go to Minneapolis and learn these lessons from personal observations, and we promise you a rich reward for your expenditure of time and trouble.

THE EXHIBIT OF APPARATUS AT CHICAGO.

SECOND NOTICE.

KUHN BROTHERS, of St. Louis, the well-known stamp photograph men, had a fine exhibit of these little pictures and also a number of excellent enlargements on bromide paper.

Brown & Goldsmith, of Springfield, Mass., had a new preservative for sensitized paper, which attracted a good deal of attention, and has received a goodly number of indorsements as to its utility.

Otis C. White, of Worcester, Mass., exhibited a number of unique and ingenious forms of accessories. Among these was a support to be used in posing, with sliding rod and ball and socket joints, that is so easily managed that the subject is not aware of its presence. Screens of various forms and sizes for special modification of lighting were also exhibited.

The Acme Water Colors were represented by T. M. Starr, of Chicago, who had many excellent examples of work done with them.

The Endean Posing Chair was one of the very best things exhibited at Chicago. In our last issue we gave a detailed account of this ingenious combination and merely note it here. Every practical photographer should see this new aid to posing.

The Acme Burnisher was represented by a goodly display, and much interest was taken in the work done by this excellent machine. Here of course a specimen of the work accomplished tells much more than a description of the machine.

The Eagle Stock House, of New York, was well represented in a display of accessories, cameras, and apparatus, and everything needed by the photographer. The genial George Murphy was also there to meet his many friends.

N. C. Thayer & Co., the well-known Chicago photographic merchants, had only a headquarters at the Exposition Building. But a carriage stood at the door ready at all times to take the members down to their extensive establishment on State street free of charge.

Gayton A. Douglass & Co. also had an office only in the Exposition Building; but their store on Wabash avenue was an interesting place to visit, and many members went there.

Mullett Bros., of Kansas City, also received friends at their office in the Exposition Building, Mr. J. B. Mullett being present with his usual hearty greeting.

Knapp & Caldwell, of New Jersey, had their usual handsome display of accessories that are always of interest to the photographer. These are made of *papier mache,* and are light, artistic and durable. The usual combinations of balustrades, stairways, rocks and other accessories were found in this exhibit, and interested many of the members.

James W. Queen & Co., of Philadelphia, had a large display of lenses and other photographic apparatus, the Francais lens being their specialty.

Wilson, Hood & Co. had an office in the building where they received their friends.

The McIntosh Galvanic Co. had an exceedingly handsome display of magic lanterns and apparatus pertaining thereto. These are certainly among the best made and finely finished lanterns we have ever seen. This display was very interesting to those who use this kind of apparatus.

W. H. Walmsley & Co. showed a number of Beck lenses and the work done with them, together with the Iris diaphragm, which is certainly a very useful and ingenious device. It has long been used on microscopes and the wonder is it has not been adapted to the photographic objective before.

This will give our readers an idea of the extent of the exhibition of apparatus at Chicago. There were a great many other little devices and ingenious contrivances that we noted, but our space will not allow us to notice them. This is yet another argument for photographers to attend these conventions; there are hosts of little ideas that can only be seen by attending the meetings and talking to the men who use them personally.

SUGGESTIONS FOR COLORED PHOTOGRAPHS.

BY D. L. HUNTSMAN.

RECENTLY there was some talk of the production of color-photographs; but, as predicted by the BULLETIN, the pretenders proved on dissection to be no more than ordinary prints colored from the reverse side.

It is surprising that so crude a thing should hope to deceive even the most unknowing. It occurred to me, when first reading these paragraphs, that some one had put in practice a process similar to the one with which I had previously made a few encouraging experiments.

The difficulty with colored photographs so far is that the tones and shadows of all the colors represented are formed by the browns or blacks of the print.

For example, suppose in treating the picture of a lady it were required to color the dress blue, when this was done the lighter parts would appear blue but the shadows brown-black, an effect of which nature has never been convicted.

A painter would render the shadows principally by increasing the intensity of the blue. A blue print would render the dress more truthfully, but the other parts would necessarily be of the same color. Now, if we could change the color of the print locally, so that one part might be red, another blue, and so on, each with its proper gradations, we would have the power to produce more satisfactory pictures of colored objects. There are several printing processes that are capable of producing pictures of any tone or color desired, notably the "powder" and carbon processes.

I prepared sheets of paper as directed for the powder process and exposed them under a transparency. Instead of developing the faintly visible image with ivory black in the usual way, I applied dry colors (powders) carefully to different parts as seemed desirable and thus developed a colored photograph. Being no artist, and using a poor assortment of colors not well adapted to the work, my results were encouraging though not very satisfactory in an artistic way. Still I am convinced that this process, when properly developed, in the hands of an artist would produce results superior to anything yet accomplished in color photography.

I have had no opportunity to continue my experiments in this direction.

Something might be done with liquid colors on a film of bichromated gelatine exposed under a positive, which would absorb the color in proportion as it had not been acted on by light.

Again, the carbon process might be followed, the pigment being omitted and the image developed on waxed glass where it might be colored to suit the fancy before being transferred to its final support.

It might be an advantage to charge the film with tin salt or like mordant to produce insoluble precipitates of the required colors.

FERROUS MURIATE AND ITS USE IN CONNECTION WITH THE OXALATE DEVELOPER.

BY DAVID COOPER.

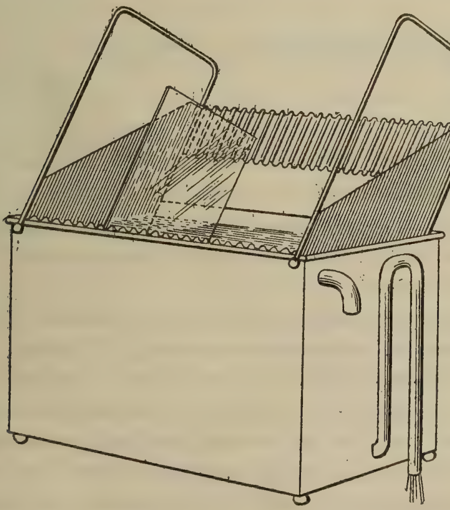
Few workers in gelatino-bromide, whether in the case of plates or paper, are aware of the numerous changes that may be rung on the good old-fashioned and well known oxalate developer. The combination of a solution of oxalate of potassium with protosulphate of iron, in proportions suited to the various formula that have from time to time been given to the public through the medium of the journals and reports of societies, is perhaps in a large measure the only one generally known and used. Let it be remembered that oxalate of potassium in combination with any soluble salt of iron forms oxalate of iron, the acids which form the compounds of iron producing various effects according as they are used. In this category we may mention, among others, tartrate of iron, lactate of iron, and muriate of iron, or properly speaking ferrous muriate. While each has characteristics peculiarly its own, which are shown in development, the one which has to my mind seemed to possess qualities of the greatest importance to photography is the last named. Ferrous muriate may be bought of the wholesale druggist at a comparatively low figure, but for experimental purposes a paper of fine tacks and a couple of ounces of muriatic acid mixed at night, well stirred, and left till next day will be found to be pretty nearly saturated with the iron from the tacks; iron filings would perhaps do better and dissolve somewhat more rapidly. The appearance of the liquid after filtration will be a more brilliant green than that of a solution of sulphate of iron, and should be tested for acidity. If found to be but slightly acid it is in good condition to be used, and combined in the proportion of one of the iron to three of the saturated solution of oxalate potassium, will be found to give a developer of extremely powerful character. In some experiments which I have tried this fact has been demonstated to me very forcibly, and I have been agreeably surprised to find that the ferrous muriate in combination with the oxalate of potassium is a more active reducer than the ordinary form of developer; in fact I think I may assert the difference in its favor to be almost one-third.

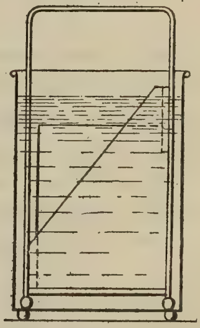
This, I am confident, will be a matter of importance to those who make a specialty of instantaneous work, a small quantity of the ferrous muriate solution being kept for use in special cases of extremely short exposures. I hope that these suggestions will be followed out by those who have more time at their disposal than I can at present afford to bring out the possibilities that exist in this rather novel form of development.

A CONVENIENT WASHING TANK FOR PLATES.

By Coleman Sellers, M. Inst. C.E., *Professor of Mechanics, Franklin Institute, Philadelphia.*

While in Scotland last summer with my detective camera, I bought a few things needed in developing my plates from a dealer in Edinburgh. I inclose you a sketch of a washing tank I obtained from him that has proved so very useful, that I think an account may be of interest to your readers. The device consists of a well-painted tin box, $9\frac{1}{2}$ inches long, 6 inches wide and $8\frac{1}{2}$ inches deep. In this is a frame stand of painted wire, with loops of wire at each end





to be used as lifting handles in taking it out of the tank. To this wire frame is attached a horizontal strip of tin having grooves to catch the bottom of the plates. A vertical strip of the same character, also provided with grooves, is placed near the top of the frame, but below water level. At one end of this tank is a siphon pipe, but of this more anon.

I had for my dark room a very small china-closet in the cottage where we had our lodging. I bought two metal pails, one for clear water, the other for slops. Convenient to my right hand I placed the tank I have described filled with water, but not up to the height to start the siphon. As soon as I had developed a plate and cleaned it, I gave it a washing, say of one dipper of water from the clear water bucket, then at once placed it in the tank, and so on until I was tired, or had my plates all finished. Then I carried the tank down back of the cottage, and when the "burn" was running clear I lifted the frame with its load of plates out of the tank and stood it in the rapid running water of the stream. When this little stream was swollen with rain I filled and emptied the tank, using water from a tap in the yard until I deemed that I had given them changes enough.

When going from one place to another I found this tin box took up little room in my trunk, for in it I always packed my glass bottles or graduated measures. Since my return home I have used it in preference to any other form of washing tank, but I have discarded the siphon pipe. That is, I have bored a hole into its high leg, putting it out of use as a siphon, and inserted a run off above its top. I allow a constant stream of water to pass from a tap into this tank, and the outflow is from the siphon and from the opening I provided above it.

The great convenience of this box consists in its loose frame. The plates when lifted from the box can be set on the tank to drain, as I have shown in one of the sketches I send you. The whole thing is inexpensive, but I have not been able to find one like it in America.

REMARKS ON PHOTOGRAPHIC CONVENTIONS BY A VETERAN.

BY A. BOGARDUS.

I HAVE been asked to give my opinion as to whether the holding of conventions is beneficial to the fraternity. I say most emphatically, Yes. I wish no better evidence of this than the fact that when the good old N. P. A. gin-out, the photographers felt the need of another association and organized one promptly.

I believe it to be a grand thing to get together, show the best work of members, compare notes, discuss processes, etc.

I believe it to be good management to change officers often, and always advocated such change in the N. P. A., but the association thought differently.

I have frequently given as my opinion that the offering of premiums, medals, etc., is not a good feature of the P. A. of A. It will always cause dissatisfaction, as my experience has shown me that nearly every photographer believes himself to be the best operator in this country, and if twenty compete and each expects to get the medal for his superior work, nineteen will be disappointed and there is trouble in the family.

Again. Where can you get men to act as judges? You could not ask practical photographers and members of the association to act, as they might be influenced in deciding by friendship and favoritism shown. If thorough photographers are not selected as judges they are not competent to act, as has been seen in the exhibitions at institutes, fairs, etc. In such exhibitions the man making the best show of frames and gaudily dressed sitters usually gets the highest premium, even if his competitors show superior manipulation. Who but the man initiated in the difficult, delicate, mystic art is capable of deciding whether the exhibitor has succeeded in his work and produced these difficult, delicate effects in perfection.

By all means hold conventions. Have your meetings so interesting that the fraternity must attend to keep up with their competitors. Let the meeting be the principal attraction and not the quarreling over medals, then every man attending will be benefited and must needs come again the next year.

Well do I remember when "Black," of Boston, stood up in our meetings to be catechised by three or four hundred members, and good friend "Clemens" told the art of albumenizing paper, saying how the old hens of Luzerne County labored to lay eggs enough for his purpose, members sitting with pencil and paper making notes of all they heard. Then information was freely imparted and I believe many men are to-day good workers because they used the information obtained at those meetings.

Friendship, kindness, good-will are the watchwords. So mote it be.

PERSONAL RECOLLECTIONS.

BY J. B. GARDNER.

[Prepared for the United Annual Reunion of the Photographic Societies of New York.]

I AM well aware that the most successful after-dinner speeches are those that contribute most to the mirthfulness of the occasion; speeches that are crowded with pleasantry and humor, and sparkle like the wine so often drank at such social gatherings. Now I must confess I am not gifted in this branch of speech-making, and therefore can only say a few simple words in response to the toast our President has assigned to me.

If, however, what I say shall tend to allay the jealousy or ill-feeling of any professional toward those who practice the art simply for their pleasure, I shall accomplish the main purpose of thus occupying a brief portion of your time.

It often affords us pleasure to reflect on the scenes and events of our past life—the school in which we were first taught, the boys who were our play-mates, and our first attempts to learn some business or profession in which we hoped to win success in the world.

We can now think of the sports and loves of our youth without being angered by the petty cares that were then mingled with them; we can remember the bright hopes we entertained, the fancies we indulged, and the airy castles we built, without regretting that they have never been realized.

We can now think of our first efforts in one or more of the various photographic processes that have been introduced in the last fifty years, processes that have so quickly followed each other that before one could be fully developed it must be laid aside for another.

We can now think of our struggle in keeping pace with the rapid advances of the art, the difficulties we surmounted, and the disadvantages under which we labored when we must needs be our own chemists and carpenters and our own teachers of optics and art.

We can remember the balky chemicals; the faulty lenses; the cumbersome apparatus; and the inappropriate light and heat in which we were forced to work. We can remember how unsuccessful we often were in overcoming the abnormal action of the chemical compounds with which we had to deal; the perplexities and anxieties we passed through; and how, our imaginations being aroused, we were often led to condemn the chemicals rather than our want of dexterity and skill in the proper management of them.

All these difficulties, together with the thousand and one now forgotten, tended to keep the mind of the photographer in a state of continual suspense, and make his whole life a sea of disappointments, shallows and uncertainties.

All this we now glance back at and feel surprised that we were so perplexed and discomfited; for we can now look upon these failures from a more philosophic standpoint and perceive their uses in the development of the art. We can now see how the pioneers cut a roadway through the forests so that the whole continent of photography might be traveled with certainty and success. There are yet obstacles and difficulties to be overcome, but the brain force enlisted to surmount these is a hundred-fold greater than ever before. The facilities for obtaining information by means of books, photographic associations and conventions must greatly lessen the labor of every student as well as improve the quality of his work. There is no branch of the art now that has not its competent teachers and guide books, and hence any who may feel disposed can easily become familiar with its secrets and enjoy the thousand delights and uses to which they lead.

Among the earliest impressions of my photographic history are the recollections of my exalted ideas of the honor of being a daguerreotype artist. And as I regarded the apparent or seeming simplicity of the art within the reach of my means and ability, I at once embarked in it, in order to win success. Thus in course of time I isolated myself from every other means of making a living, and however willingly I would have parted company with the profession, I could devise no means of accomplishing it without making a sacrifice more unbearable than the business itself.

Being thus cut off from all means of retreat, it was a forced march onward, until good luck so attended my efforts that I was content to bear the ills I had, rather than to fly to others that I knew not of. Thus content gradually inspired me with a love for the art that has never waned, and though I now know there is neither much honor nor money to be won in its pursuit, it has a charm that will no doubt hold me "till death do us part."

At a time when there were only some five or six daguerreotypists in the City of New York, I called on one of the most noted, whose place of business was on Broadway, only a few blocks from my own, and in course of conversation was severely censured by him for giving instruction in the art. His idea was that it should be kept a profound secret; that there were already too many in the business; and that he alone would undertake to make all the daguerreotypes the city demanded. There is no doubt he could have done this and taken a less number of pictures in a month than is now taken in a single day by some of our leading photographers. In attempting to defend myself as best I could, I endeavored to convince him that every one we could persuade to learn the business was not only fifty or a hundred dollars in our pockets, but, if they succeeded, their influence and money would tend to multiply the demand for pictures and more rapidly develop the capabilities of the art. I think however I failed to convince him of the truth of my philosophy, for he still continues the old cry that there are too many in the business, and that those who are in it are most greatly injured by the amateurs outside. It has never occurred to him that he is indebted to them for the best text-books on photography; for the largest portion of its literature; and for its most ingenious mechanical inventions and chemical compounds.

Every thoughtful photographer cannot fail to perceive that the amateur element, by means of its wealth, culture and refinement, has added much to the dignity of the art and the volume of its capital. The professional should therefore cease to be envious of the amateur and seek rather to win his favor, for it is only by the union of both that the highest good of all can ever be accomplished.

EXCLAMATION POINTS.

By Daniel R. Garden, *Secretary of the Polytechnic Section of the American Institute.*

[Prepared for the United Annual Reunion of the Photographic Societies of New York.]

I have pinned together, as it were, some thoughts in commendation of photography which I now submit to you.

The steamboat, the railroad, the telegraph are by no means venerable as to their years of usefulness, and vast and varied as have been the modifications and improvements made in them, yet they have been largely used for commercial purposes.

Photography, like the points of the compass, has been brought to bear upon almost every phase of progressive civilized life, not only for profit, but in the interests of science, the dissemination of knowledge, and not alone to

> "Eye nature's walks, shoot folly as it flies."

Doubtless it would be entertaining, instructive, and thoughtful to but briefly review some of the numerous details which have tended to this advanced grade of excellence, but at best it would be to leave many important points "untouched," many valued coworkers unmentioned.

As photography is utilized in numerous "ways of life," so too it has drawn its effectiveness of to-day from many engaged in different pursuits.

The restless and noisy world knows something of its pleasing and marvelous successes, but the failures, surprises, and disappointments are usually unvoiced secrets.

Few reach success by the short road. What photographer is there who cannot find some consolation for his failures, some hope for his surprises, and some cheerfulness for his disappointments when scores of hundreds of inventors can truthfully and heartily join him in the chorus:

> "Ten thousand movements scarce one purpose gain."

If

> "A thing of beauty is a joy for ever,"

think, oh photographers, how ye have added to the happiness of this world. What art can capture the identical like yours?

And how very expeditiously the bright and the beautiful on sea and on shore may be solar delineated, so that we of these later days really see more than those of a generation ago. Truly indeed has your art prolonged the hours, for

> "To shorten time is to lengthen life."

The myriad-minded Shakespeare predicted the dawn of your art-science when he phrased

> "Look here, upon this picture, and on that,
> The counterfeit presentment of two brothers."

Evidently he knew something of "retouching." Witness whereof the words of Lady Macbeth:

> "Out d—— spot!"

Even the Blackbird on the wing did not deter your watchful-eyed cameras from activity; for you

> "There's a picture in every wave."

Nature is God's genius, photography man's ability.

One allusion and I shall terminate these unrounded phrases.

On August 19, 1839, Arago made his memorable communication in the session of the French Academy on the wonderful discovery of Niépce and Daguerre. This year, at the Paris and other observatories, by the application of photography the most distant recesses of the heavens' grandeur will be brought to earth, and then begin a complete map of the celestial vault, whereon shall be shown not only five to six thousand stars visible to the naked eye, but millions of other stars, even the most distant and feebly lighted, which cannot be seen save through telescopes of the utmost power. And thus photography will leave to future ages an authentic and absolutely exact account of the heavens as they appeared at the end of this nineteenth century.

Our art has surely, steadily and successfully expanded, for its vitality has been freshened and nurtured by its ever-increasing and close-clinging votaries, who have added grace to its strength and beauty to its delicacy; whose investigations are not nipped by failures nor chilled by mistakes.

He would indeed be a mad prophet who would venture to predict where the next important novelty in this art-science will burst forth upon the circle of this century, so replete with wonderful and gigantic strides in science and art. But in whichever quarter it will help solve some of the problems which now defy human science. If it will increase our present comforts and add some new fragrance to the beautiful creations glowing throughout this world, benedictions "so far and yet so near" will cordially greet its advent, and history, with ready pen, will indelibly record its welcome.

CARBON PRINTING: EXPLICIT INSTRUCTIONS FOR PROFESSIONAL AND AMATEUR PHOTOGRAPHERS.

BY MAX BOLTE.

(*Continued from page* 464.)

Enlarging Small Negatives by Means of Artificial Light (*Petroleum or Gaslight*).—The carbon process offers many great advantages for the production of large prints by means of small negatives. The first and principal advantage is that the enlargements are stable, which, considering the high price paid for such class of work, is of great importance. Secondly, no other process allows of the production with such ease and certainty of a good and convenient transparency for enlarging as the carbon process does. And, thirdly, the results obtained are of such beauty that no other process can furnish them. Besides, it must be taken into consideration that any negative, provided that it is absolutely sharp, may be used. The proceeding is as follows. A positive is produced in the usual way by the enlarging camera; the exposed tissue, after having been moistened, is squeegeed to a clean glass plate and developed. This positive is placed in a printing frame, and, using another sheet of sensitized carbon tissue, a negative is produced. Or the positive is placed in the copying camera and by the wet process a negative is produced, which now serves, after having been retouched, for the reproduction of as many large prints as are desired. As stated before, the transparency for enlarging requires a carbon tissue richer in color than that ordinarily used. For the successful production of a good transparency intended for enlarging, it is necessary to employ the carbon paper prepared with collodion; and furthermore, it is best to always gelatinize the plate to which the exposed tissue will be squeegeed, for then reticulation will be avoided. The gelatinizing for this purpose is best done as follows: 13 ounces of Nelson's medium gelatine are soaked for one hour in 400 ounces of cold water, which is now warmed to produce liquefaction. When fully dissolved a solution of 1 ounce chrome alum in 160 ounces water is added by degrees, vigorously stirring the solution, which is kept warm and filtered through fine muslin. The glass plates are flooded with this warm solution in the same way as if collodion was employed. The plates so gelatinized are allowed to dry in a cool place free from any dust. The plates may thus be prepared in advance, taking care to mark each one on the back in order to know the gelatinized side. They are stored in cases of convenient size, laying the gelatinized sides face to face.

Before use these plates are carefully dusted, placed for one minute in cold water, then carbon tissue is introduced, and when it flattens out is brought into contact with the plate and, together with it, is withdrawn from the tray. The squeegee is applied in the usual way and some pressure exercised upon it. It must remain under pressure for not less than ten minutes before it can be developed.

The *enlarging lantern* may be used with advantage. The condenser should be of from 4 to 6 inches and of double plano-convex construction. Since the enlarging is done in the dark room no camera is required, and all that is wanted is an easel or a conveniently constructed plate holder. It is easy to make such arrangements on one wall of the dark room, where it does not interfere with other work there, to fix a board on which to rest the plate holder, or a board of suitable size on which the paper may be attached by means of some tacks. The lantern is placed on a camera stand provided with casters, and placed in position before the easel. The focusing is done upon a white card, which shows much better than any ground glass. The way of inserting the transparency in the lantern determines whether a reversed or right negative will be obtained. For pictures intended to be made by the double transfer process the film side of the transparency must stand towards the condenser, for the single transfer it must stand towards the enlargement. Enlargements produced by the double transfer process have a very beautiful appearance. The retouching cannot be done upon the collodionized print when separated from the plate, but there are four opportunities to retouch them: First, in the original negative; second, on the carbon transparency; third, on the enlarged negative; and finally, on the print whilst it is still in contact with the plate. All this retouching, so to speak, is invisible. Care should be taken not to overdo the retouching; a little practice will soon teach how far it may be carried.

The photometer also comes into use for enlargements produced by a solar camera or by artificial light. It must be placed within the circle of illumination, and in order to ascertain the time of exposure required, a strip of carbon paper is exposed first and developed before undertaking the production of the enlargement. The enlarging lantern may be used with the lime light, an exposure of corresponding duration being given. From twenty to thirty minutes will be found sufficient. When a solar camera or lime light are used, the enlargement may be made direct from the small negative, thus saving the production of a positive. Some operators also use for solar printing a small carbon transparency and develop the insolated carbon enlargement on glass, while after intensification with permanganate of potash it is employed for the production of large prints.

Failures and Their Causes.

This chapter contains an enumeration of the failures to which the carbon process is subject, since the old adage, "there is nothing perfect in this world" applies unfortunately to this beautiful process just as well as to any other.

Failures.	Causes.
The black gelatine whilst sensitizing runs off in streaks.	The sensitizing bath was too warm.
The same occurs whilst drying.	The bath was too warm; squeegee the tissue plates on a glass or zinc plate and dry in cooler room.
Particles of dust or fibers of the paper adhere to the tissue after squeegeeing.	The plate was not clean, or the squeegeeing had been done without the rubber-cloth.
The tissue does not lay flat in the printing frame.	The paper has been dried too fast and should be allowed to absorb a little dampness.
The tissue sticks to the negative.	The paper was not dry enough, or the negative or pad was damp. Impermeable paper or rubber cloth should be laid between the tissue and the pad.
The wax on the plate cannot be polished.	The plate was too cold, the wax was not pure, or the polishing flannel was damp.
Small air-bells appear after laying the sensitized tissue upon the glass plate.	The paper was not a sufficient time in the cold water, or had not been lowered with enough care upon the plate. Withdraw the tissue, remoisten and replace it.
The tissue does not stick to the plate, the borders raise.	It had remained too long in the water, was over-exposed, or suffered from emanations from kitchen, gas, etc. Apply pressure for 10 to 15 minutes. A prompt way to learn if the paper is still good is to apply hot water to a small piece of unexposed tissue, if the gelatine dissolves it is still good.
The tissue in developing does not separate from the plate, or the picture does not develop, remaining too dark.	The exposure was too long, or the transfer was made too late after the exposure to light. Hotter water, or a bath of two per cent. carbonate of soda, or the addition of a few drops of liquid ammonia may be used; or the paper is not good.
The tissue lifts too quick from the plate and the picture is too light.	The exposure to light was too short. Develop with cooler water.

Air-bells appear on the back of the tissue when immersed in the developing bath.	The water was too warm. Begin with cold water and raise its temperature by degrees. The air-bells often show in the picture.
The picture lifts on the borders whilst the collodion remains.	No safe edge had been used, or the paper was spoiled. Too old, or affected by emanations from gases.
The picture, together with the collodion, lifts from the plate.	The wax contains tallow. A slight addition of rosin to the waxing solution is the remedy. The collodion had dried too much before the plate was immersed in water.
The collodion film breaks.	It is too soft or too fresh; addition of negative varnish. The film was hurt. The borders of the plates are too sharp.
Dirt or particles of paper between picture and plate.	If they were not on the plate since the beginning, they come from the water.
Air-bells between the picture and the plate or the flexible support.	The tissue was not lowered carefully upon the support, or the squeegeeing was not done in the right way.
The picture is full of small fissures.	The paper was too long in the sensitizing bath, or the bath was too strong or too warm.
The picture appears granular or reticulated.	The tissue was not left long enough in contact with the support. Paper which has suffered from emanations of gases, or dried too fast, shows these defects very often.
The picture swells up much when immersed in water, and moss-like excrescences appear in the picture.	The sensitized paper is spoiled by emanations from kitchen, stable, gas or closets.
Reticulation of picture during development on glass plates.	The exposed paper had not remained a sufficient time in cold water before affecting the transfer.
Small brilliant spots or air-bells appear in the picture.	Same reason as the preceding. They form some minutes after the transfer, and as they are between the paper and the collodion, there is no remedy.
Cloudy appearances, principally in the background of the picture.	If hotter water does not remove them, then they are due to the alcohol which was still present in the collodion when making the transfer.
The picture shows no half tones.	The negative was too dense. Expose the tissue before or after printing for a few seconds to daylight; or the paper was dried too fast and consequently is too soluble.
The transferred and dry picture does not leave the support, or sticks to it in some places.	The proper flexible support or plate was not well waxed; the waxing solution contains too much rosin; the waxing was polished off entirely; or the flexible support was dried with too much heat.
The double transfer paper leaves the plate without the carbon picture.	It had been dipped in too hot water, or the alum bath was too strong.
The picture is full of brilliant spots, principally in the high lights and around the outlines.	The transfer paper was soaked in too cold water.
The picture is granular.	The second transfer was made too late.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

ON THE PRESERVATION OF SENSITIZED PAPERS.

To the Editors of the BULLETIN.

BESIDES the well-known process of Marion's, patented in 1858, I send you the following from the *British Journal of Photography* for 1862, by M. Herman Krone. "Our practical studies upon this subject have clearly demonstrated that sensitized papers do not keep perfectly by merely being dried and placed in a box, but that it is indispensably necessary to maintain also in the box a feeble current of gaseous chlorine, which converts the recently reduced particles of silver into chloride of silver. It is on this account that we have never been able to preserve our highly albumenized papers, after sensitizing, in boxes containing chloride of calcium alone.

"While chloride of lime employed alone in our boxes has already yielded highly satisfactory results, a mixture of these two bodies,

Chloride of calcium	3 parts.
Chloride of lime	1 part.

enables us to keep our sensitized albumen papers or printed proofs for a much longer time than is ever necessary. Of these two bodies the latter perpetually exhales gaseous chlorine, and the former absorbs all moisture that may be present. Let us further add that an excess of gaseous chlorine causes the paper to lose all its gloss and diminishes the sensibility of the chloride of silver. That is to say, brings it into the state of pure chloride of silver without an excess of nitrate of silver.

"Papers thus preserved print much moreeasily and acquire richer tones in the chloride of gold bath. The traces of nitric acid liberated during this preservation seem to us to exercise no adverse influence on the paper. While it all remains dry, and, provided the prints be well washed previous to toning, we have found our preserved prints retain perfect purity in the whites, without the slightest tinge of yellow. We cannot say the same thing of paper preserved by chloride of lime alone, for these proofs acquire after a short time slightly yellow tints in the whites, especially when the chloride of lime has become moist and watery through long use.

"The more completely the paper is impregnated with salted albumen, or the more the albumen contains chloride of silver produced by sensitizing, the more difficult becomes the preservation of the paper and the greater the necessity to add chloride of lime to the chloride of calcium in the box. The thinner and more superficial the film, the more readily will the paper remain white, even without artificial preservation, and when it is kept only under a press, a paper in which the albumen has been coagulated previous to sensitizing keeps much better than one not coagulated. For albumen (like all organic bodies) reduces the salts of silver to the metallic state more slowly when it is coagulated than it does when in the soluble state."

T. C. R.

OUR ILLUSTRATION.

THE handsome photo-gravure that we present to our readers with this issue of the BULLETIN is a copy of the famous picture (17 x 21) of Mr. James Landy, of Cincinnati, which obtained the beautiful Blair Prize Cup awarded to the best picture in the exhibition at the Convention at Chicago. We are specially indebted to Mr. Landy for the permission to copy it, and furthermore he was kind enough to furnish the negative from which the photo-gravure was made. This is to-day probably the finest photographic composition in America. It is a true study in art and photographic composition by a master hand, and copies of the original picture being obtainable, we think every photographer that can afford it should obtain one.

The whole idea of the picture is so truly artistic that it will have a permanent value and be a source of enjoyment to every true lover of our art. The quiet of the place where the old monk sits, the dim and mellow light, the skull, with its lesson of man's mortality vividly expressed, the Book, with its promises of immortality, the finger assisting the eye in following the text, all go to make the story full of power, and gives the picture a force that holds the observer in mute admiration. This is photographic art; this is the high mark at which photographers should aim, and they should put more of this art in their pictures.

BLEACHING BROMIDE PRINTS.

BY F. C. BEACH.

[Read before the Chicago Convention.]

PREPARING sketches in lines with black ink for photo-engraving purposes is now so general, that it has seemed to me there is a need, if possible, of using bromide paper as an aid to the artist for this purpose, since it would save time and be more convenient.

It is well known that if an untoned silver print be inked over in lines, the photographic image may readily be bleached out by pouring on the surface a solution of bichloride of mercury and alcohol, or the print may be floated thereon.

To obtain the best effects by the photo-engraving process it is required that the original sketches be of large size. Hence, when a picture is to be reproduced, it is necessary first to make a small negative, then a positive by contact, and third, from that to produce an enlarged negative, from which the silver print is made, over which the artist sketches.

It occurred to me there was an unnecessary amount of time lost, provided we could utilize the bromide paper, for upon that we might enlarge directly from the original negative to any desired size, then by sketching over the picture with ink our object would be attained. But the difficulty that presented itself was the simplest and best way to bleach out the photographic image on the bromide paper so as to leave a white background between the ink lines. In looking over several books on photography I was unable to find a definite formula for this purpose, but recently I read that a picture on bromide paper was made to entirely disappear by the use of ferric chloride.

Acting on this suggestion I submitted a bromide print, after fixing and washing, to the action of a very strong solution of ferric chloride for many hours, with the result of bleaching it out until it attained a sandy brown color. Beyond this the solution had no further bleaching power.

Using a solution of bichloride of mercury on another print I was able to whiten it, but the shadows were of too pronounced a brownish-yellow color to render it of any use. Recently I have tried a series of experiments which may be of some interest as showing by what simple means successful results may sometimes be attained.

I first made an 8 x 10 under-timed bromide print, and before fixing it in hypo cut it into four parts. Two of these I fixed in a mixed hypo and alum bath, the others I left unfixed.

Knowing that a weak solution of ferricyanide of potassium (commonly termed red prussiate of potash) in hyposulphite of soda was the standard advised for reducing negatives, I inferred that if it was made strong enough it might act as a good bleaching agent by reducing away the picture.

Accordingly I prepared the following solution:

Hyposulphite of soda	480 grains.
Ferricyanide of potassium	240 “
Water	6 ounces.

dissolving each in the order named. The solution presented a dark green color and kept clear for about an hour, after which it became muddy.

Laying one of the unfixed portions of the bromide print upon a plate of glass, I poured over it the above solution; rapidly, and in about a minute, all traces of the picture at once disappeared. After washing, looking at it by white light, it was, as I surmised it might be, quite yellow. The next question was to dissolve out the extra silver unacted on by light and whiten it, so I immersed it in the hypo and alum bath, but this had the reverse effect, for by decomposing the ferricyanide the paper rapidly changed to a beautiful Prussian blue color. When the print was dried I afterwards endeavored to eliminate the blue by immersing in a weak solution of carbonate of soda, but without success. I then subjected the fixed portion of the print to the same solution for three-quarters of an hour, but was unable to reduce away the picture sufficiently.

The result of this experiment shows that an unfixed bromide image may be immediately bleached out with the above solution, leaving a yellow color on the surface of the paper. I next made a solution of bromide of copper, as follows:

Bromide of copper solution	½ ounce.
Water	3 ounces.

I then submitted an unfixed portion of the bromide print to its action. In the course of three or four minutes the image was transformed to a very light sandy yellow color. At this stage I dipped my finger in the hypo solution, then touched the corner of the print, and noticed all trace of the picture disappeared at that point very quickly. I then inferred a mixture of hypo with the bromide of copper would effect the same result. In this I was not disappointed, and found the following solution would effectually and easily bleach out either an unfixed or fixed bromide print in about five minutes' time. Continual movement of the solution over the surface materially helped the bleaching action.

Bromide of copper solution	½ ounce.
Hyposulphite of soda	100 grains.
Alcohol	1 ounce.
Water	2 ounces.

The alcohol is added to prevent the ink from spreading.

I purchased the bromide of copper solution already prepared, but it is very easily made. The following is the usual formula. Make two solutions as follows:

Solution A.

Bromide of potasssium	120 grains.
Water	4 ounces.

Solution B.

Sulphate of copper	120 grains.
Water	4 ounces.

Mix the two and we have a bluish bromide of copper solution.

A final experiment was the immersion of a bromide print for long intervals in two successive baths of boiling water. To my surprise, though the test was severe, no dissolving action took place. By running the finger over the surface of the print the soft gelatine could be felt, but the picture appeared to be imbedded in the texture of the paper and did not disappear.

With this paper I submit the specimen sheets or pieces of paper treated in the different ways described for examination. The experiments were made upon a paper developed with ferrous oxalate.

In respect to the finished polished print here submitted, my experience is that the best and easiest way to secure a high polish is to employ what is known as hand-polished vulcanized rubber sheets, or specially prepared ferrotype plates, and also a paper coated with rather more than the usual amount of gelatine. Too little gelatine will give the surface of the print a mottled, half-finished appearance, particularly when observed by reflected light. In warm weather the prints will not readily strip from the rubber sheets unless they are fixed in a combined hypo and alum bath. Before squeegeeing on to the rubber, the surface of the print should be rubbed over with the fingers under water in the tray, to take off any of the milky sediment settling upon it while filling. If this precaution is not observed, the print when stripped will present a mottled, mealy appearance.

A very simple squeegee is a thick rubber tube about one inch internal diameter and any length desired, drawn over a somewhat longer stick. The print is laid face downward on the rubber, the surplus water on the back being taken off with blotting paper. The squeegee is then rolled over the print, pressing out all air-bells, besides bringing the print in uniform contact with the rubber. When dry it is readily pulled off from the rubber, having a fine polish. No talc or oil is necessary. I have used these rubber sheets for nearly two years with perfect success, and do not notice that the surface becomes dimmed. For giving a high polish to unmounted silver prints the polished rubber is unequaled. Simply squeegee the albumen prints while wet on to the rubber, the same as the bromide ones.

In conclusion, I may add that many of our valuable processes are founded on simple experiments carefully carried out; if then all those photographers who have the time and inclination would study and experiment, note the results, and freely impart the same to others, how much richer in useful and practical information the entire fraternity would become.

I trust scientific experimentalists in photography will become more numerous in future years, especially in this country, and that a spirit of intercommunication of ideas and the exchange of the results of practical manipulation will over-ride all feelings of hesitation, competition and jealousy.

INTENSIFICATION OF GELATINE NEGATIVES WITH NITRATE OF SILVER, GALLIC ACID, AND PERCHLORIDE OF IRON.

BY JOHN BARTLETT.

[Presented at the Chicago Convention.]

On the very advent of the gelatine plate, its detractors found their strongest attack in the difficulty attending intensification.

Many and evil, one is almost tempted to say, are the methods which have been proposed to infuse strength into a weak dry plate negative. There is such a liability of the image to change, and so great danger of staining the film attending the operation, that the photographers have come to look askance and strangely at any new formula proposed.

Despite the injunction to secure proper density by proper exposure and development, there are times in every one's experience when recourse must be had to some means for saving a negative, to save one's reputation. It is just at such moments that one longs for the good old silver intensifiers of collodion days. Mercurial intensification, notwithstanding the facility and rapidity of its action, has proved too often a delusive hope. Intensification with silver is the great desideratum. The only drawback to its general employment is the great danger of staining the gelatine film. Nevertheless the results it yields, when care is exercised, are so far superior to those obtained by any other method, and the assurance of permanency so much greater, that many endeavors have been made for an application free from the tendency to stain.

Hitherto the methods employed have insisted upon the necessity of the use of acids and other restrainers directly in the intensifying solutions; but as Dr. Ellerslie Wallace has shown in a paper on "Silver Intensification," published in the June, 1887, number of the *American Journal of Photography*, the presence of an acid with the silver and gallic or pyrogallic acids tends only to slow the operation, and by subjecting the plate longer to the action of the fluid really increases the risk of discoloration.

At the April meeting of the Photographic Society of Philadelphia, I communicated a method for intensifying gelatine negatives with nitrate of silver and gallic acid in which neither an acid nor any other restrainer is added directly to the intensifier. The formula was the result of the experiments of Mr. John G. Cassebaum, of Philadelphia. The negative, after it has been thoroughly fixed and washed, is placed in a preliminary bath composed of

Nitric acid	10 drops.
Chrome alum	1 ounce.
Water	20 ounces.

Citric or acetic acid may be substituted for the nitric acid, in the proportion of one ounce to twenty of water.

In this bath the negative is rocked for a few minutes, rinsed under the tap, and then placed in the intensifier, which is made as follows:

Solution A.

Gallic acid	80 grains.
Alcohol (95 per cent.)	1 ounce.

The solution must be kept until all turbidity subsides. Care must be taken to select a good quality of gallic acid, as upon its purity everything depends.

Solution B.

Nitrate of silver	30 grains.
Distilled water	1 ounce.

After a good sun bath, filter from any black sediment.

To prepare the intensifier for immediate use, take one dram each of these stock solutions (A and B) to the ounce of water.

The gallic acid and the nitrate of silver may be mixed directly in the graduate and the water added afterwards, without any fear of precipitation, provided everything is clear and the chemicals pure.

Place the negative in a scrupulously clean dish, glass or porcelain preferable to rubber, and pour over the intensifying solution, keeping the dish in gentle motion to insure uniformity in the deposit. The negative will gain in strength more rapidly than when a restraining acid is present, and any desired degree of intensity may be obtained.

The essential conditions for success are thorough elimination of hypo from the film and the utmost cleanliness in manipulation. The necessity of the preliminary bath will be apparent at once if application of the intensifier is made without its previous agency, an almost immediate staining of the negative taking place. The object of the chrome alum is merely to conteract the softening influence of the acid in the preliminary bath. It may therefore be omitted in cold weather, or when there is no tendency in the film to frill.

Having thoroughly tested the virtue of Mr. Cassebaum's intensifier, I submitted it to a number of practical workers who highly commended it for its efficacy. I was therefore much surprised at reading in the *British Journal of Photography* comments upon it any way but flattering. The editor severely criticised it "as lacking in agreement between results proposed and obtained," declaring that "the preliminary bath as recommended, and the absence of restrainers in the intensifying solution, entirely destroy any possible advantage derivable from the Philadelphia formula."

This verdict of so eminent an authority in photography induced me to thoroughly investigate Mr. Cassebaum's formula, to discover the cause of any possible failure. The result of a great number of trials strengthened my belief, not only in its superiority over the other methods of silver intensification, but confirmed my opinion of the simplicity and uniformity of its action. During the course of my investigation however, I discovered a modification of the original method, which is acknowledged by Mr. Cassebaum to be a decided improvement. It is in the constitution of the preliminary bath, which is as follows:

Perchloride of iron	4 grains.
Citric acid	4 “
Chrome alum	2 “

to each ounce of water.

The negative is immersed in this solution and kept in constant motion for a minute or two, but not long enough to occasion a bleaching of the film. On removal it is well washed and placed in the gallic acid and silver solution as given in the formula above. It will be found to build up much more rapidly than by the former method, keeping perfectly clear and brilliant, even if allowed to remain a long time in the solution. There seems to be no liability to stain of the film so treated.

After the necessary strength is attained, the negative is again washed until all greasiness disappears from the surface. This is caused apparently by the imperfect assimilation of alcohol and water. Finally, as a precaution for the removal of any uncombined silver, the plate is dipped for a minute or two in hypo, and then washed.

Should a slight opalescent film appear upon the surface on placing the negative in the intensifier, do not regard it with any seriousness. It is due to insufficient washing on removal from the perchloride of iron, and is easily rubbed off with a piece of wet cotton, and will entirely disappear in the hypo. If the negative is allowed to remain in the perchloride of iron until the film bleaches, the subsequent immersion in the hypo will greatly weaken the image which has been strengthened by the silver. It seems that the chloride of iron, acting upon the film, forms a nucleus for the deposit of the silver reduced by the gallic acid, and the intensification is a genuine building up of the image and not a mere staining of the film with an adiactinic color as is the case with certain other intensifiers.

With this modified intensifier I have strengthened negatives with such pale images that mercury was incapable of producing any amelioration.

As the perchloride of iron is in itself a reducer and also a clearer, its preliminary action in intensification will be found of great value in removing any chemical fog upon the negative, which, if suffered to remain during the intensification, would also strengthen along with the image and detract materially from the brilliancy of the result. This clearing action of the perchloride of iron gives a clearness to the intensified negative, so that it can scarcely be told from a well developed plate.

In making known this modification, I desire it not to be forgotten that the credit belongs essentially to Mr. Cassebaum for being the first to successfully employ silver and gallic acid as an intensifier for gelatine plates without necessitating the slowing action of acids and other restrainers. I am abundantly gratified in having my modification regarded as an improvement upon his original method.

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THE PHOTOGRAPHERS' PROTECTIVE ASSOCIATION OF AMERICA.

BY W. H. H. CLARK.

[Presented at the Chicago Convention.]

At the earnest solicitation of our worthy President, Mr. Cramer, I have consented to occupy a few moments of your time, and have chosen as my subject one which is nearest my heart and should be with every member of this organization—nay, with every photographer in America. The theme I have chosen is the Photographers' Protective Association of America. Mutual protection is a bond of love. In other words it is the fulfillment of the golden rule: "Do unto others as you would that they should do unto you."

The question, and a pertinent one, has no doubt arisen in the minds of every photographer: What will become of my loved ones when I am gone, and the more so since the great increase in the ranks of photographers and the consequent lowering of prices for work performed? I might ask, yea, I have been asked by a very large number, what real object have we in perpetuating this association? The reply would naturally and truthfully be, for the advancement of the photographic art. But, my friends, what becomes of those dependent ones in the meantime? While we are advancing the interests of photography can we not as well provide for the comfort and care of the loved ones of a brother in case of his death? Self-preservation is one of the laws of nature. You need this protecting influence. I need it. If we expect others to contribute to the relief of our loved ones when we are gone we must likewise contribute to theirs.

What a cheerless thought for those dependent on us that some day, no one knows how soon, they may be left alone and unprotected, and compelled to beg for the crumbs that fall from the rich man's table. Every family needs protection, for all business enterprises are attended with uncertainty; hence every one having dependent relatives should insure, whether his business is on a large or small scale.

The question then for us to consider is this: Can we not offer the required protection at the minimum of cost? There will be no large and elegant office to support, no large salaries or commissions to pay. Our association must and will be maintained, and properly and skillfully managed, and with a comparatively small extra outlay we can afford this insurance. The past year has demonstrated the fact that a separate office for the Secretary is superfluous, and hence a useless expense upon the association.

The two offices, Secretary and Treasurer, could and should be combined in one, and the incumbent should alone have charge of procuring railroad rates, mailing certificates to members, collecting dues and assessments, paying benefits, etc., and should have a salary adequate to the duty performed and the responsibility of the position, and should be placed under sufficient bonds for the faithful discharge of his duties. Then, with Local Secretary, our salaried officers would be all told. A Corresponding Secretary is no more needed than a fifth wheel to a coach. Take the amount paid that officer for salary and expenses in attending the meetings, together with what the Treasurer receives, and with a moderate sum added you could secure one man's whole time, and our association would be much more prosperous.

As to plans of assessment, there are many in operation which could be secured, compared, and selections made. Three good ones I might mention are the Odd Fellows Mutual Benefit of Providence, R. I.; also a different plan by the Odd Fellows of Galesburg, Ill., and Farmers' and Mechanics' Mutual Aid Association of St. Louis. If we had but six hundred members to start with, and could pay to the heirs of a deceased brother but $600, how vastly superior that would be to nothing; and with this benefit feature adopted our association would rapidly increase in numbers, and every member would feel a greater desire to extend its influence and add new members, a selfish motive, perhaps, but a laudable one. There is no more propitious season than now to organize this protective branch of our association, and no class of men on the earth more needing beneficent protection than photographers, and the influences of our association were never more favorable.

All new members should be admitted only on a physician's certificate, but all present members in good standing should be allowed to partake of the benefits without any reserve whatever, for they have made the association what it is, and deserve full benefits. We should take our chances upon them. The American Travelers' Protective Association, which lately met in St. Louis, represents nearly every State in the Union, and numbers nearly twenty thousand.

The editor of the Spanish-American newspaper published in that city says: "There is no organization that excels that of the American Travelers' Protective Association in point of utility, enterprise, sound business principles, general intelligence, gentlemanly deportment and a genuine spirit of Americanism." Take away the protective feature, and think you that organization would remain in a condition to be so highly lauded?

With a protective feature added to our association we will in a few years number thousands instead of as now but a few hundred, and it will do more towards regulating that all absorbing question of prices than all other forces combined, by uniting us more closely in the bonds of brotherly love.

I need not even suggest ways and means of procedure. Make the fact known by a popular vote that you desire the adoption of a protective feature, and there will be those found able and willing to devise rules and regulations to meet the exigencies of the case.

It has been suggested to me that should the outline here given for a protective feature go too deeply, the next best thing would be to simply assess twenty-five cents upon the death of a member, and send $100 to the family for burial purposes. That would be very good to send a check at once upon a notice properly attested of a death. There are many cases where even $100 would come in *apropos.*

This last plan has this to recommend it, that it would require no special legislation, or special books, or specifications, or anything differing from what we now have, excepting the vote to make it a feature and incorporate the same into our By-Laws. I incline towards the first plan of resolving ourselves into a full-fledged protective association; but should the members see proper to try the latter first it could be used as a stepping stone to something higher and more elaborate should it become desirable and popular.

Now, my friends, with a little promptness and foresight a great deal of suffering can be alleviated, and at seemingly no cost or inconvenience to us as a body or individuals. I have been repeatedly told by a large number who are not now members that if this feature was adopted they would at once join the association. There is no doubt in the world but that it would largely increase our membership. How much better a man feels, and can work, when he knows should he be called hence that his loved ones would not be left entirely destitute. There is no escaping death, and no matter how well fixed some of us may be we all need this protection; for there is no telling how soon "riches may take to themselves wings and fly away," and at a time in life too when we may be totally unable to provide for those remaining behind.

Now, in conclusion, let me urge upon you, my brothers, not to leave this hall until you have caused by your vote some measures to be taken whereby a protective feature of some kind may be adopted. "Procrastination is the thief of time;" yea, and it will steal the protection from your loved ones. A committee should be at once appointed to put this matter in proper shape and to be reported upon before the final adjournment of this Convention. Talk is well enough, but action, prompt action, is needed. Shall we have it?

ELEMENTARY PHOTO-MICROGRAPHY.

BY ANDREW PRINGLE.

[Read before the British Photographic Convention at Glasgow.]

CIRCUMSTANCES over which I have unfortunately no control cause me to prefix to my title the qualifying adjective "elementary." It may appear to many present that in addressing a meeting on this subject at all I lay myself open to the charge of presumption, for I cannot deny the "soft impeachment" that I am in photo-micrography myself only a tyro, and, in colloquial phrase, a "duffer." But, gentlemen, I have often noticed, and frequently stated, that more is to be learned from the failures of a careful worker than from the brilliant successes of a natural genius, and it seems certain that a man fresh from the difficulties attending any pursuit is more likely to remember the existence, the causes of, and the cure for, these troubles than the man who left them behind years ago, just as it is probable that our sons who left school last year are more conversant with the eccentricities and atrocities of the Greek particle than we are, who have for years directed more immediate attention to the eccentricities of the share market and the atrocities of the butcher and the tax collector. Anyhow, the very briefness of my experience in photo-micrography must serve as my excuse for addressing you on a matter which may be child's play to many of you.

Of the utility of photo-micrography there can be little question, and its utility is not by any means confined to the province of the great achievements of "past masters" in the art. I doubt even if the sphere of greatest utility is to be found in the use of the very highest powers upon the minutest and most recondite objects. Moreover, however great the experience and talent of the microscopist, his purse must be as long as his practice and as deep as his knowledge if he means to travel into the highest realms of the science whose borders I mean to touch. Be this as it may, I have no present intention of traveling beyond the country I know; that is to say, the very first and simplest operations for the production of photo-micrographs.

I will begin by pointing out the subjects that suggest themselves to my mind as presenting only slight difficulties, and yet fraught with vast importance to humanity. I do not think I need point out to a body of photographers—nor, indeed, to any body of reasoning beings—the superiority of a photographic delineation of any object whose qualities depend on its reality rather than on its ideality, to any delineation that can be made by hand, however deft, guided by eye, however acute. Even the most perfect transcript that could be made with the aid of a camera lucida must fall immensely short of a transcript by the unerring and invariable action of light. The finest line that ever was drawn by mortal man is a cable in comparison to the lines that may be produced by photography. Now the very essence of micrographic delineation is clearness and detail, and I submit to you that for clearness and fineness of detail the photographic print must leave far behind all manual dexterity.

What, then, are the objects to which photo-micrography lends itself with the most conspicuous excellence? Undoubtedly such objects as depend for our knowledge of them on their histology, on their most minute markings, on their varying appearances under various kinds and directions of illumination; as, for example, under reflected, transmitted, direct, oblique, and polarized light. To scientists studying minute organisms, or minute portions of organisms, the greatest difficulty, and yet the most essential point, is to examine and get delineations of these objects under varying conditions of lighting, and so to become acquainted with the objects that one object can never be mistaken for another, nor one condition for another. In the first place I will mention physiological and pathological objects; in other words, portions of animal tissue in a normal state, and in a state of disease or abnormality. From experience I can state that many objects of this kind are not difficult to photograph in such a manner that the delineations become of great interest and value for those benefactors of our race, physicians and surgeons. Again, there are many of the lower living organisms whose nature and habits are obscure, though their dimensions are not very minute. There are also vast tribes of diatoms and foramniferæ whose nature is as interesting as their appearance is beautiful. The geological formations of our earth form a branch of science of the last importance to man, and the study of them with light, direct or polarized, is one of never-ending interest and variety. The substances which afford nutrition to our bodies and act as counter-agents to the waste going on constantly in our life, are, for the most part, amenable to microscopic examination, and, what is more to my purpose, to photographic delineation. Lastly, the germs of disease, not only in the animal, but in the lifeless organisms so familiar to us, can be and have been, and shall be, if we are spared, examined, distinguished, and portrayed by microscopic and photographic agency till their natures, their habits, their transmission, their reproduction, their annihilation, if it please Providence, shall be matters not of mystery confined to the savant, but understood by all the people. This, gentlemen, is a noble ambition, and the path to its fulfillment is not a dreary, nor a dark, nor a criminal one; the path is illuminated along its course by gleams of highest interest, by intense satisfaction, by a knowledge that the pursuit is glorious and the end philanthropic. The highest flights of photo-micrographic science are surely arduous, beset with enormous difficulties, but we must remember that, as we progress, the difficulties vanish behind us, and what we now look upon as well-nigh impossible, will, in the future, appear pigmy impediments. The very simple operations I propose to mention to this meeting appeared, not so many years ago, to the mass of photographers, as matter of the greatest uncertainty and difficulty, and only to be fully understood and successfully worked by men who have spent much time in mastering the details of microscopic science.

(*To be continued.*)

ANTHONY'S
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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, SEPTEMBER 6, 1887.

President NEWTON in the chair.

The usual vote of thanks was tendered for the photographic papers and journals received since the June meeting.

The Chairman of the Executive Committee announced that the subject of the evening was the field day review, with an exhibition of photographs captured by members of the Society of Amateur Photographers of New York and the Photographic Section of the American Institute, with introductory remarks by the Presidents of each of the above named associations. He also announced that at the next regular meeting, to be held October 4th, the subject of the evening would be "Photography as an Aid to Art," by the President of the Kit-Kat Club, P. J. Cusachs, Esq.

President NEWTON then made the following remarks:

This evening will be devoted to a review of our recent field day, outing, dinner, etc., and to show pictures, the result of the day's work, or some part of it.

This annual field day and excursion differs from any which has preceded it, being really a company field day, a kind of co-partnership with the Amateur Society. I look upon it as a capital idea. There are no reasons why the two societies should not be on friendly and reciprocal terms. No rivalry whatever should exist between the Society of Amateur Photographers of New York and the Photographic Section of the American Institute.

When the Amateur Society was started in this city, invitations were sent to the members of this Institute, and its first meeting was held in the rooms of the Photographic Section. The first names on the list of members were those of the General Superintendent of the American Institute and the President of its Photographic Section. Their object in becoming members was not that they would receive any personal benefit, but to help the Amateur Society as far as it was possible for them to do. That feeling still prevails, and if this Section can aid or benefit the Amateur Society in any way, it is bound to cordially do so. Our interests and advancement being mutual, there should be no feeling of rivalry or jealousy.

It was suggested this year that we should go together on the annual field day and excursion and thus increase the circle of pleasure. As to the success of the outing I can vouch for this Section's enjoyment.

I am sorry to see so few of the members of the Amateur Society here this evening.

When this Section was organized it was necessary to know many things, which are not now required, to be a first-class amateur photographer, such as a general knowledge of the chemistry of photography. We had to make our negative and silver baths, our own albumen paper, and a multitude of other things. Now no knowledge of any of these things is required. Prepared plates are in the market which after exposure are often taken to a professional to develop and print from. Then the amateur coolly exhibits this as his own work. In course of time it will probably come to pass that some enterprising Yankee will publish a long list of places of interest throughout our continent, so that the amateur can select those he prefers from specimen prints and thus be saved even the present trouble of exposing the plate, and then he can exhibit them as his own handiwork.

By special request the Secretary of the Polytechnic Section, Mr. DANIEL R. GARDEN, read the following, under the title of "Exclamation Points." [See page 557.]

The *Vice-President*, Mr. J. B. GARDNER, was also called on to rehearse the following after-dinner speech, which call was complied with after first stating that he regarded the speech not altogether *apropos*, inasmuch as there were a number present at the meeting who were not at the dinner, and also that the form of the composition might be regarded as egotistical from the fact of his frequent use of the first person in place of the third. Giving what he regarded as a valid reason for this seeming egotism, he announced that the subject that had been assigned to him was "Personal Recollections." [See page 555.]

Mr. Gardner was followed with brief speeches from Sculptor McDonald, Professor Laudy and Dr. Mason.

The Long Island poet, Mr. B. H. Cutter, read two amusing poetical compositions, after which a number of photographs were exhibited taken on the day of the outing (September 3d) by Messrs. Newton, Mason, Leaming, and others whose names were not announced.

The exhibit was highly eulogized, and many expressed the desire to have a complete set of these pictures to keep as a fitting memento of the field day of 1887.

The Outing Committee were both highly praised for their success and censured for their mistakes, and of the latter none were more free to speak than the committee itself, while at the same time it expressed the hope that any sin of ignorance it had committed in the past, might be avoided in the future by the wisdom of experience.

At the usual hour for closing, ten o'clock, the Section, on motion, adjourned.

FOURTH ANNUAL CONVENTION OF THE CANADIAN PHOTOGRAPHIC ASSOCIATION.

First Session.

THE Convenfion met at Toronto, on September 6th, at 8 P.M. *President* BARRAUD, of Barrie, in the chair.

In his opening address, the *President* extended a welcome on behalf of the association to all visitors. It was very gratifying, he said, to see such a representative gathering on the first day of the convention, and he had no doubt but that the number would be materially increased by the morning. This showed a growing interest on the part of devotees of the art throughout the length and breadth of the country in everything that went to improve the position of the profession. He welcomed the American visitors and hoped that the annual conventions, both on this and the other side of the line, would tend to a better acquaintance of the photographers with each other throughout the length and breadth of this continent. Such gatherings as the present were sure to improve the members, as it was only by an exchange of ideas they could hope for success.

The remarks of the President were greeted with rounds of applause.

Secretary POOLE, of St. Catherines, then read the minutes of the convention of last year, which were adopted.

The judges of exhibits were then selected, and Messrs. Dixon, Stanton and Bryce were on this board.

After the reading of the report of the Executive Committee the meeting adjourned, to assemble the next morning.

Second Session, September 7th.

The meeting was called to order at 10 A.M. *President* BARRAUD in the chair.

After reading the minutes of the former session, *Secretary* POOLE reported, on behalf of the Executive Committee, that as regarded a programme of procedure as much time as possible would be devoted to the Question Box.

This met with the general approval of the association.

The *Secretary* then read a number of questions propounded by members. One of these, regarding the comparative value of what are known as cheap lenses, elicited a great deal of discussion.

The question of the present high duty on photographic dry plates was then introduced.

The *President* said that as soon as the change occurred, the executive officers of the association presented a petition to the government, through Mr. Dalton McCarthy, M.P., showing that the duty is really about eighty per cent.; that it was excessive and a direct injury to the photographer, as those who wished to produce the very best results still used imported plates. The duty, he said, benefited only two or, perhaps, three Canadian manufacturers, and if thirty per cent. was not enough to protect the home industry, he thought the photographers should not be taxed for their support.

The *Secretary* then read the following letter, which was received through Mr. McCarthy, in reply to their petition to the government.

OTTAWA, June 20th.

DEAR SIR.—I am in receipt of your letter of the 17th instant, with inclosure of petition from the Photographers' Association of Canada with reference to the duty on photographic dry plates, and in reply I beg to say that the increased duty was imposed in order to give protection to the manufacturers in Canada, it being represented to the government that the plates could be made in Canada. It is too late to make any change in the tariff this season, but the matter will receive careful consideration during the recess.

Yours, etc.,
(Signed) CHARLES TUPPER.

It was decided to postpone further discussion of this question until the evening session. A committee, however was appointed to draft a memorial to the government which would be considered then. It being 12 o'clock the association adjourned to meet at 8 o'clock in the evening.

Evening Session.

On calling the meeting to order, *President* BARRAUD intimated that a number of interesting questions had been handed in for discussion.

The *Secretary* then proceeded to read them. "Whether is the ruby or the orange light better for use in the dark room" elicited a lengthy discussion. The general opinion was that one thickness of lemon-colored tissue paper and one of orange post formed a far more agreeable light to work by, while at the same time it was quite as safe as the ruby.

A paper by Mr. LANDY on the question of prices, elicited the statement from Mr. Stanton that prices in Toronto were improving.

Another paper, by Mr. POTTER, of Indianapolis, on the "Flotsam and Jetsam of the Chicago Convention," also touched on the question of prices.

The further consideration of the present high duty on plates was then introduced by the Secretary presenting the draft of a memorial to the government.

The memorial was adopted unanimously by the convention, all the members signing it. It was decided also to circulate it among the photographers of the country for signature.

Mr. Stanton and others expressed their views on this matter in a way that showed they felt that an injustice was being done the fraternity for the purpose of benefiting a couple of Canadian manufacturers. Mr. Stanton said he was a national policy man to the extent of say thirty per cent., but he drew the line at about that figure. Ninety per cent. was too much of it for him, especially as he found it absolutely necessary to use foreign-made plates.

Some further business of a routine nature was transacted and the convention adjourned.

Among others present were Mrs. Fitzgibbon Clark, of St. Louis; Mr. Bellsmith, of Rochester, N. Y.; Mr. Edgeworth, of St. Louis; Mr. Lybach, of Niagara Falls; and Mr. Inglis, of Rochester. Much of the success of the meeting was due to the exertions of *President* BARRAUD, *Secretary* POOLE, and Messrs. Dixon, Farmer and Stanton.

Among the exhibitors were C. W. Motes, of Atlanta, Ga.; Cramer, of St. Louis; H. E. Simpson, of Toronto; Dixon, of Toronto; Gardner, Zybach; the Surveyor-General of Canada; J. A. Lord, of Uxbridge; Mertens, of Stouffville; Whiten, of Orilla; Poole, of St. Catherines; Pound, of Port Perry; Stein, of Milwaukee; and McMichael, of Buffalo.

The exhibit was a large and interesting one.

MEETING OF THE PHOTOGRAPHERS OF TEXAS.

HELD AT DALLAS, AUGUST 6, 1887.

IN response to the invitation that had been issued, a goodly number of photographers from different parts of the State met at Dallas, Texas, on August 6th, and took the initiatory steps of organizing an association. It was decided that the name of the association should be "The Texas State Photographers' Association," and the following officers were elected for the ensuing year: J. H. WEBSTER, *President;* G. C. RHINE, *Vice-President;* C. F. COOKE, *Secretary*, and S. T. BLESSING, *Treasurer.*

Committees were appointed. The one on Constitution and By-Laws was instructed to prepare same and report at the next meeting for consideration and adoption.

It was decided that the next meeting of the association will be held at Dallas on the 27th of October and continue three days. This will be during the Texas State Fair and Dallas Exposition, which opens October 20th and continues to November 7th, and as this will afford unusual attractions, it is to be hoped all who can attend will avail themselves of the opportunity of attending both the fair and the association meeting. By resolution each and every photographer in Texas was invited to become a member of the association.

It was also resolved that we, as an association, make an exhibit of our work at the said Texas State Fair and Dallas Exposition, and that a committee be appointed to secure space and make all necessary arrangements for such exhibition, and to report same.

Said committee report that they have secured the necessary space, and invite each member of the association, and those contemplating becoming members, to send them such photographic productions as they may wish to put in display.

Each package should be securely packed, and the name of the exhibitor so marked that it may afterwards be identified, and expressage prepaid, and shipped so that it will reach Dallas not later than October 18th, as the fair association requires that all exhibits shall be in place on the opening day, which is October 20th.

Mark package "Texas State Photographers' Association, Care S. T. Blessing, Dallas, Texas," and it will be received and properly arranged in position, and when fair is over will be reshipped according to instructions of sender, and all without charge.

No individual premium is offered in this department, but it is believed that the pride we take in our art will be sufficient incentive for a good display.

Each individual photographer in the State of Texas is cordially invited to be present at our next meeting, and to join our association and strive to make it what it is hoped it will be, a mutual benefit to the members.

H. B. Hillyer,
A. R. Billows,
S. T. Blessing,
Committee.

◆

A Problem.—"Now, Abs'lum, I's bought yo' a new hat, an', min', if yo' wah it out dis summah, yo' kain't hab 'nudder."

"Kin I wah it in de house?"

"No; course yo' kain't."

"Wal, den, granny, if I mus'n't wah my hat in de house, an' if I kain't wah it out, whah I gwan wah it."—*Harper's Young People.*

Ruling Passion Still Strong.—St. Peter—"Come in good and faithful servant."

Newly-arrived spirit—"Sarvant, is it ye say? It's lady's help I waz, sir."

"Oh! Well, never mind. Come in."

"That's heaven, is it?"

"This is heaven."

"How many nights and afternoons out will I have?"—*Omaha World.*

◆

The discussion in a recent number on developing instantaneous exposures is really worth three times the price of a year's subscription to any photographer. I can't keep it out of my hands until I have every idea brought out in that discussion thoroughly located in my mind. It is like digging in a gold mine to study it. How can any photographer do without it? Well, I could not sleep over night without it. I might as well move out in the woods where there are no inhabitants and expect to do business, as to run a gallery without my journal. I think this year it is nearer perfection than ever.

Success to it. Yours respectfully,
John Esmay.

What Our Friends Would Like to Know.

Q.—T. S. A. writes: Please answer the following questions through the columns of the Bulletin. 1. Why is the pyro and soda developer generally used instead of the oxalate and iron? 2. How long will saturated solution of oxalate of potash keep, also protosulphate of iron? 3. How much sulphuric acid should be added to 8 ounces of iron solution? 4. If the oxalate of potash solution turns blue litmus paper red, should any oxalic acid be added?

A.—The pyro and soda developer is used in preference to the iron because it will develop shorter exposures and the pictures are softer and have better gradation. Oxalate of potash solution will keep indefinitely. Protosulphate of iron will keep many weeks in a well-stoppered bottle, but hardly more than two months. Much depends upon how often the bottle is opened and how long it is left open. About five drops of sulphuric acid should be enough for 8 ounces of saturated iron solution. Oxalate of potash that turns blue litmus paper red needs no oxalic acid; but if the crystals are simply dissolved in water, then tested, and they give an acid solution, that oxalate of potash is not good. The solution should be either neutral or alkaline before adding oxalic acid.

Q.—L. V. T. writes: Will you please inform me, through the Bulletin, whether prints should be quite or slightly red with acetic acid before toning?

A.—If you wish to make brown tones the prints may be made red with acetic acid before toning; but for black or purple tones use no acid.

Q.—C. C. K. incloses print and writes: Can you tell me what is the trouble with the print inclosed? Seven out of ten of the pictures were spoiled in this manner. Some of them I noticed before printing, and I finished them to see how they appeared afterwards. Others I did not see until after they were finished. Three of the pictures in the same lot were very fine.

A.—The trouble with your paper is that it has been kept where either sewer or illuminating gas has come into contact with it. This is the cause of the stained appearance, which is due to sulphureted hydrogen gas acting on it.

Q.—E. H. writes: Will you kindly give me your assistance by answering the following through the BULLETIN: By accident about half a pint of toning solution (acetate and carbonate of soda, and whatever gold remained after toning the day's work) was spilled into a dish containing silver bath. Will it do any harm other than precipitating some of the silver?

A.—Make the bath slightly alkaline with ammonia, place it in the sun for some hours, and then filter it. Repeat the exposure to the sun and see if it again gets black; after which, filter if necessary, and make up to strength with new silver. The bath will then be good again.

Q.—C. & H. inclose two prints and write: We inclose two portraits; what is the matter with them? What is the cause of the mottled appearance on the face on the black mount, and also the cause of the ugly appearance of the paper of the white mount? We know that the portrait on the black mount has been badly exposed and developed, but is that the cause of the coarse appearance of the face? How about the toning? How can we dry an argentic plate in less than an hour? They don't stand heat, either natural or artificial. We use very cold water and cool everything in fresh well water, but have no ice. How often can the same cyanide solution be used? How can we clean glass of old negatives? We are using sulphate of iron, should it be pure necessarily; if so, why should it be? How can it be purified?

A.—The prints are both bad, because not printed deep enough, and that on the white mount appears to be from a thin negative. Try printing it in the shade on well-fumed paper. The appearance of the face on the black mount is due to imperfections in the skin, and the negative should be retouched. To dry an argentic plate rapidly, wash well and then flow repeatedly with strong alcohol (95 per cent.). Cyanide solution can be used until it will no longer fix the plates, when it should be precipitated and the silver it contains saved. Old negatives can be cleaned by soaking in hot strong solution of washing soda. Pure sulphate of iron should be used because it is more reliable than impure. It can be purified by recrystallization.

Q.—C. W. S. writes: I write to inquire if you have ever published a formula for what is known as the swell gelatine process. If you have and can furnish one, what will be the cost of same. If not, can you give any information concerning it.

A.—Such a process was published in the *British Journal of Photography* Almanac four or five years ago. It is the Paul Pretch process.

Q.—A. T. N. writes: Will you please advise me, through the BULLETIN, what will take silver stains from linen and other cloth goods without also spoiling the hands. I am using the N. P. A. Pense albumen paper and it turns brown in one night after being silvered. I cannot keep it 24 hours either before or after printing; the back of paper turns first. Please say what is the trouble and how I can keep it longer. I use bath 50 strong. Is there any danger of silvering too much? If so, its effects etc.

A.—Put solution of iodine on the linen until the stains turn yellow, then soak in strong solution of hypo for some time and wash well. Judging from your description you have immersed your paper in your silver bath instead of floating it with albumen side on the bath. This is the only way we can account for the paper being colored on the back. You can keep silvered paper by placing the sheets between dry soda paper. Soda paper is made by soaking blotting paper in strong soda solution and drying thoroughly in an oven. It must be used dry.

Q.—O. D. P. writes: Can you tell me how much of Solution B I ought to use in making up a toning bath according to the formula for using Anthony's sensitized albumen paper. I fail to obtain the purple tones, but can get the others all right. The toning seems to stop just on the verge of the purple. It does well enough for views, but I like the purple for portraits. What brand of paper do you use to make the ready sensitized paper.

A.—Use enough of Solution B to make the bath distinctly alkaline to litmus paper, that is to turn red litmus paper blue, and then add about two fluid drams more of the solution to every 8 ounces of bath. Fume the paper fully half an hour, and print very deeply. The N. P. A. paper is used in making the ready sensitized variety.

Q.—A. G. C. writes: Would you inform me, through the BULLETIN, the reason of lack of intensity with the Stanley plates. I am using the Stanley developer and if I happen to overtime the least bit I can't get them intense enough. I have a very quick east light, and use a Ross lens No. 4. By so doing you will greatly oblige.

A.—Endeavor not to over-expose the plates, and begin with a developer weak in alkali or dilute, and add pyro rather than alkali to get density.

Q.—A READER writes: Will you please let me know if you have ever seen a picture taken by moonlight, or rather can it be done? Answer through BULLETIN.

A.—Yes, we believe it can be done. Mr. Frith, of Bermuda, has sent us several such pictures, and a New York gentleman took one with an exposure of four hours that was very good and scarcely distinguishable from daylight.

Q.—J. W. S. writes: I have a large number of fine photographs to paste in blank books made for the purpose. In using ordinary starch paste the card-board on which they are mounted will warp in drying. Is there any way of overcoming this difficulty?

A.—Use the starch paste very stiff and thick and only dampen the prints, don't wet them by dipping in water. Use a damp cloth or wet blotting paper.

Views Caught with the Drop Shutter.

ONE of the handsomest souvenirs that was presented to us at the Chicago Convention is a handsome quarto volume containing the portraits of the twenty-four Mayors of Chicago. This was given to a number of their friends by Messrs. SWEET, WALLACH & CO., and we must say it was an elegant present. The pictures are handsomely engraved, and with them is interesting letter-press giving a short account of the lives of the various Mayors of the great city of the West.

WE note there is another BULLETIN, called *Schumann's Photographic Bulletin.* This is a little sheet containing a few photographic notes and the price list of Theo. Schumann, of Atlanta, Ga.

GEORGE T. BIRDSALL succeeds Charles T. Pomeroy at Leavenworth, Kansas. CHARLES T. POMEROY succeeds Mr. Buckwalter at Kansas City.

W. S. BELL & CO., of Fifth avenue, Pittsburgh, were burnt out on August 13th, and lost everything except their lenses, which were in a safe. We are glad to note they are in full running order again and ready to meet their friends and customers.

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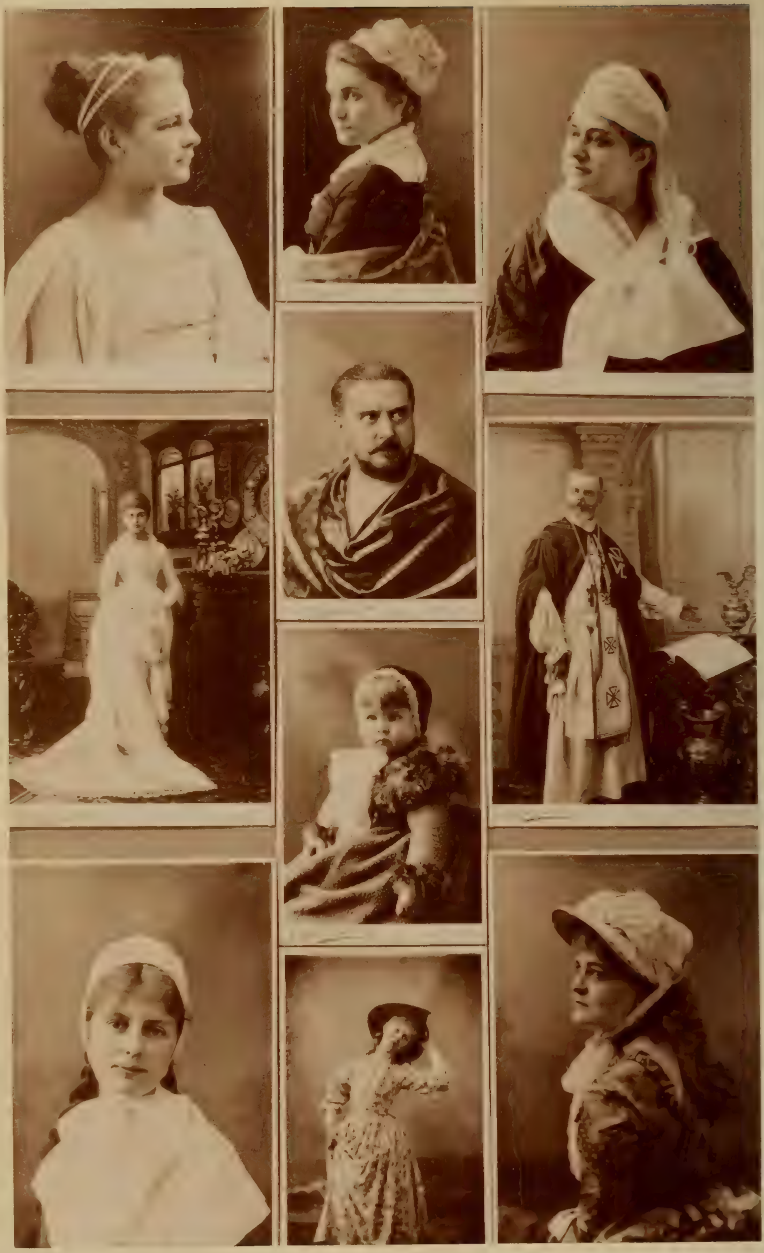

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-AT-
CHICAGO CONVENTION.
1887.
AWARDED
ASSOCIATION GOLD MEDAL
-AND-
STANLEY $100 PRIZE.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

OCTOBER 8, 1887. Vol. XVIII.—No. 19.

A PLEA FOR PHOTOGRAPHIC RESEARCH.

There is perhaps no department of practical science where the labors of body and mind are so recklessly wasted and thrown away as in our beloved art-science of photography. Among the tens of thousands of amateur photographers in the United States, how few of them are doing work to advance the science of photography; how few of them are doing any kind of systematic work to elucidate some of the knotty problems that perplex every true lover of our art. We know of but one man to-day who is doing anything to advance the scientific work of photography, and that is M. Carey Lea. What a world of thought and stimulus for work is opened to those who have the time, in the field he has recently investigated. There is room for a hundred men to work upon this domain alone, and Mr. Lea is scientific man enough to welcome every one who comes with a heart in his work and the patience and energy to labor for the sake of opening new mines of photographic wealth.

It appears to us that here is the road to that long wished for achievement, heliochromy, or photography in color. These remarkable compounds, with their wonderful range of shades of color, are open to the investigation of many workers and the harvest awaiting those who will enter the field is a rich one.

Another field where the energies of a number of our enthusiastic amateurs could find use for both time and brains is in the field of orthochromatic photography. This subject is by no means exhausted, although much good work has already been done by such men as Vogel, Eder, Schumann, Bothamley and others. But there is a vast unknown to be discovered in this line of work. Who will be among the pioneers in this new land of promise for photography?

Yet another domain rich in promise of practical results is the development of a better positive printing process. In spite of all its drawbacks, albumen paper to-day stands without a rival for the production of artistic and agreeable positive prints. The reason of this is that the manufacture of the paper has reached such a stage of perfection and its use is so simple, that any competitor for favor that stands up against it must be equally perfect and just as simple in the method of using it. Nevertheless, albumen paper is subject to such little caprices of irregularity every now and then that worry both maker and user, and make them long for something more reliable and capable of being produced and used with more assurance of obtaining successful results. It is true we have the platinotype method, and also the bromide paper process; but these are very trouble-

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some to manipulate compared with albumen paper, and the prints are not of such an agreeable tone as those with this material. Another, and perhaps the most important drawback to these newer positive printing processes, is the fact that you cannot tell exactly the right exposure to give without several trials or a pretty large experience, whereas with the albumen paper you can see the progress of the action of the light upon the silver chloride and nitrate and can stop just when you have found you can get the best results in the subsequent toning and fixing. Again, the more recent positive processes do not allow of the prints being toned readily, an advantage that the albumen process has over all others from the extreme simplicity of the method of changing the color of the prints within certain limits to suit both the character of the subject and the taste of the operator.

Where then are those who are willing to enter the field of photographic research? Among our amateur societies, with their finely equipped dark rooms and facilities for experimental work, who is there that will tell us something more about the new photo-haloids of silver recently discovered by Mr. Lea? Who is there that will give us a new positive printing process of the same simplicity and giving the same beauty in the resulting pictures that we now obtain with albumen paper?

These are only two of the fields of photographic research, but there are many others. Some substitute for pyrogallol, with its strong tendencies to stain the negative and everything else that it touches, is a desideratum. Some good substitute for hyposulphite of soda to fix both negatives and prints, that shall be equally as rapid and reasonably economical, is also a very desirable subject for experimental work. But we have said enough. All we desire to accomplish is to call away some of the energy now wasted in vain attempts at some experiments in making negatives of useless subjects, and direct it into channels where there is a prospect of benefiting mankind, advancing our art-science, and winning laurels of renown for every true and patient laborer in the field. We are well aware that there is a commercial value in the achievement of success in some of the lines we have indicated, but it must be remembered that the greatest discoveries and those most useful to mankind were not made by looking specially for them; but great results and those most worth obtaining have been accomplished by those who have the true spirit of scientific research, a desire to widen the bonds of human knowledge for the love of discovery alone. Now we cannot but believe that in our numerous photographic societies there are men who have the necessary leisure, energy and money to take up and carry out to good result a number of the problems of scientific photography. To these we advise the mapping out of some definite line of work, submitting it to such a course of experiment that the results will be quantitative rather than qualitative, and thus insure a real contribution to the advancement of photography. By quantitative photographic work we mean, let the questions of time, space and weight of material be carefully measured and their influences recorded; this is the only true method of scientific research. The best results in modern scientific work are obtained by the massing of the small contributions of individual workers upon apparently trifling points in special fields of research. So it must be in photography, and so we believe it will be. Let us see the laborers in the field and we shall be the first to ring their praises and accord to them full honor for all their achievements.

EDITORIAL NOTES.

In the September number of the *Century Magazine* is a capital article upon "Amateur Photography," giving an outline of the origin and work of the Cincinnati Camera Club. The paper is from the pen of Dwight W. Huntington, of Cincinnati, and the illustrations are from negatives taken by members of the Camera Club of that city. Among these are views taken by Messrs. D. W. Huntington, H. F. Farny, J. D. Smith and John Stettinius; that by the latter being his celebrated shot "The Diver," which is the most remarkably accurate instantaneous photograph we have yet seen.

We are glad to note that the New York Microscopical Society has condemned the retouching of photo-micrographic negatives. This is a piece of deception that no true lover of science can tolerate; it is here that we desire the truth, the whole truth, and nothing but the truth in every sense of the words, and we heartily indorse the action of the New York Society.

At the recent solar eclipse in Russia some good photographic work was accomplished. At Krasnoyarsk the corona was photographed, and at Petrovsk, Professor Stangevich succeeded in getting a photograph of the green line of the corona. A photograph of the entire spectrum was also obtained.

English and Swedish meteorologists have called in the aid of photography in studying clouds. By means of the camera, and by determining the height of clouds by simultaneous observations from two points, a series of results were obtained showing that clouds of the same form are situated a like distances from the earth's surface.

Herr Himly, in the *Photographische Mittheilungen*, recommends the use of a solution of nitro-prusside of sodium, one in three hundred, instead of hyposulphite, as a preliminary bath before development to accelerate the speed of gelatino-bromide plates. With the nitro-prusside the pyrogallal developer can be used, which is not the case with the hypo bath.

H. McMichael, of Buffalo, N. Y., was awarded the prize offered by J. G. Ramsey & Co., of Toronto, for the best general exhibit at the Convention of the Photographers' Association of Canada, held in Toronto September 6–9th. The prize was a scarf-pin in the shape of a solid gold camera made by Tiffany & Co., of New York, which is an exact copy of the 2 B outfit made by our publishers. Incidentally we may mention that the pictures which obtained this prize were made on Stanley plates, adding another laurel to the many lately captured by Mr. Stanley.

At a recent visit to the studio of Mr. Geo. G. Rockwood, of Union square, New York, we saw him using a drop shutter under his sky-light to make the exposures, and on asking the question, "What plates are you using?" he replied, "Stanley's." Such work is a pretty good test of rapidity.

Our publishers have called our attention to a paragraph in the *Eye*, of Chicago, in which it is stated that they, together with Notman, of Montreal, were instrumental in getting a protective tariff put upon dry plates imported into Canada. They desire us to say that there is not a word of truth in the statement, and that they have not been and are not now interested, directly or undirectly, in influencing the Canadian Tariff on Dry Plates.

[*From our Special Correspondent.*]

ENGLISH NOTES.

Slow development—do American photographers generally realize how much depends on it? It is not an important point for exposure in the professional's studio, where the correct exposure can be gauged to a fraction of a second, and where time is an element of great importance. I know a first-class professional who uses a developer of great strength; he applies it at once to the plates, and development is completed in less that two minutes; and very fine portraits he obtains. "But for outdoor work," he said to me, "I should consider the use of a strong developer as simply suicidal."

The importance of the point has lately been brought home to me in a striking manner during the development of a long series of negatives obtained during a recent tour. I use the sulpho-pyrogallol prepared by the Platinotype Company. It is a preparation of pyrogallic acid with sulphite of soda and sulphurous acid, and is put up in the form of a ten per cent. solution. I invariably commence development with the following mixture.

Pyro	3	grains.
Ammonia	¼	minim.
Ammonium bromide	¼	grain.
Water	1	ounce.

I keep all chemicals for development made up in the form of ten per cent. solutions, so that with a minim measure any formula whatever can be speedily made up.

And here I may digress for a moment to notice the good work which is being done by a committee of the London Camera Club; they have dissected the published formulas issued by the makers of dry plates, and published a table showing the preparations of each ingredient required for every ounce of developer. This table is invaluable; you ought to get some person or body to perform a similar service for American dry plates. But perhaps the formulas are all alike.

Well, having commenced development with the very weak developer given above, I wait for two minutes; and if no sign of the image has then appeared, I add another quarter of a minim per ounce, and repeat the dose two minutes later. By this time the image has probably begun to appear, and by its character I know whether to expect an under- or an over-exposed plate. In the former case the high lights blacken, while the shadows remain white; in the latter the whole picture comes up with various tints of gray. In the case of under-exposure I should add, at intervals, three more doses of alkali of one minim each (the plates will stand well four minims per ounce); for over-exposure I add first a grain of ammonium bromide, and then equal quantities of bromide and ammonia in quarter grain doses. In this way I have saved negatives which I knew to have had exactly sixteen times their proper exposure, and I seldom fail in securing a passable negative.

Now the developer made up with sulpho-pyrogallol remains quite clear, and only faintly yellow, for a considerable length of time. As far as freedom from staining the plate is concerned, and activity, it is just as good after developing two or three negatives as when freshly made up. Hence I have frequently used the same developer for a second or even a third plate. But in so doing I have almost invariably been disappointed, the succeeding negatives being inferior in brilliancy and density to the first one. I was especially struck with this in some negatives of a regatta recently developed. All had received the same (shutter) exposure, under precisely similar conditions. They were developed in pairs, the second plate of each pair receiving the completed (strong) developer which had resulted from the successive additions of ammonia required to develop the first. In every case the second plate was inferior, indeed considerably so. All my experiments lead me to believe that the plan of slow, tentative development, building up the image gradually by small repeated increments of the alkali, is beyond all doubt the best when the highest results are desired, and when time is not an element of importance. To properly develop a negative by this plan will usually require from 15 to 20 minutes.

The Camera Club has taken another very important step. It has appointed a committee of five members (including Captain Abney and Mr. Bolas, the editor of the *Photographic News*) to investigate "the rapidity of the various makes of dry plates or films; the gradation or range of tones yielded by them; their sensitiveness to different colors," etc. This is taking the bull by the horns, indeed, and we may "look out for squalls" (from some of the disappointed makers) when the report is published.

In a fly-sheet which they recently issued, I see the Eastman Company assign "over-exposure" as one of the two causes (the other being "rapid development") of grain being visible upon paper negatives. Now we knew, or thought we knew, that under-exposure was a certain way of producing this *bête noir* of photography. I have got some glorious examples of grain in paper resulting from attempts to use it for instantaneous work; and I never yet saw a good picture resulting from a really rapid exposure with paper. The fact is that first-rate results are not nearly so easy to get on paper as on glass. Over here paper came last year with a rush; but it has made but little headway this summer, and I think its use with us will continue to be the exception rather than the rule. We carry small cameras—three out of four never take out a camera exceeding half plate size—and our traveling is not very extensive. Under these circumstances the main advantages of paper are not made manifest.

People are now coming back from their holidays. Printing is being done extensively, and mounts and frames are being looked out. The cause of all this is that the exhibition and medal season is about to commence. The "parent society," as we call the Photographic Society of Great Britain, opens its doors in Pall Mall during the first week in October; and a little later we shall have the "Third Annual Amateur Photographic Exhibition" promoted by the London Stereoscopic Company, who offer fifty pounds in cash and fifty medals as prizes. By the way, how can an amateur receive cash as a prize? In athletics such a step would at once cause him to be disqualified from ever competing with true amateurs again. I think the cash ought to be given in some other form. Then in the middle of October an important exhibition will open at Dublin; while we hear of others elsewhere. And everywhere there are medals and other prizes to be won. Why should not the recipients wear their well-won honors at the conversaziones usually held in connection with such affairs? In such a case some photographers—Henry Peach Robinson for instance, who has won over ninety—would be hard put to it to find room on their breasts for all their decorations, while conspicuous by his plain black coat would be the form of

Talbot Archer.

NINE YEARS A TENT PHOTOGRAPHER.

By E. A. Bonine, *Los Angeles, Cal.*

I find it necessary to step out of my dark room for a few seconds while developing, and when I do so I close one eye. When I return I can see with that eye, while several minutes will often elapse before I can see anything in the dark room with the other one. This idea I took from a descriptive article by Fanny B. Ward, who is traveling in Mexico, and who states that the Mexican miners close one eye while passing windows in bringing out ore. I applied it to photography and it works first-rate.

A few weeks ago I was admiring the beautiful gloss on a lady amateur's unmounted photographs. She said that she squeegeed them same as paper negatives. The result is beautiful. This may be old to the craft, but to me, a back frontier photographer, it was new. And here let me say I do not despise amateurs, for the public needs educating, so that they can discriminate between photographs of good quality and trash or copies.

A few years ago I was in Yuma, and made a number of Indian pictures. By and by I had opposition. A company of so-called photographers, styling themselves the New York Stereoscopic Company, had gathered up my Indian pictures, copied them, and sold them to the druggist in Yuma, to a Jew bookdealer in Tucson, etc. I then concluded there were scrubs in the profession as well as scrub amateurs.

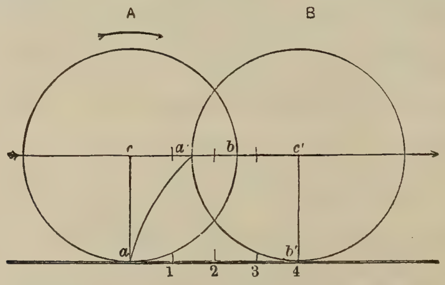
In a certain Arizona town there lived a so-called photographer—his wife said "he could not get along because he drank up all the *chemics.*" A friend of mine traveled with a tent and an old drunk got track of his alcohol bottle, but going for it one night he made a mistake and took the cyanide bottle. Next morning he was fixed stiff as a fence-rail.

INSTANTANEOUS PHOTOGRAPHY.

To the Editors of the Bulletin.

I have just been noticing the print and accompanying text of the Boston Express in the Bulletin for May 22, 1886, and desire to call attention to the following which has doubtless been overlooked, but with no wish to detract from the merits of the picture.

Observing the print, it will be seen that while the lower part of the driving-wheels is sharp, the body of the locomotive is not. A speed of thirty-five miles an hour means fifty-one feet per second, but, while the train moves at this rate, the lower part of the wheels does not.



Assuming the diameter of a driving-wheel to be about five and one-tenth feet, the circnmference will be sixteen feeet. Referring to the accompanying diagram, let A represent a driving-wheel on a rail and B the position of the wheel when it has made a quarter revolution. While the train has moved a distance of *a b*, or four feet, the lower part, *a*, of the wheel has passed in a curved line to *a*, a distance of only about three feet, or at a speed of but about twenty-six miles per hour. Were the wheels larger the motion of the lower part would be yet slower.

Samuel E. Rusk.

Claverack College.

A NEW RECORD SLIP.

To the Editors of the Bulletin.

In a former Bulletin I see a writer gives a form for a new record book. You will notice the one I inclose. I think it is an improvement. I have it bound in a book of about three hundred slips. When I put a plate in holder, I mark coupon (Holder ——) tally with the number of holder (1), tear off coupon (No. ——), and stick it on the back of plate.

No. 1. January 5, *1887*. 3 P.*m.*

Exposure Time *Min.* 15 *Sec.* *Light* Poor.

Lens Darlot 2 *Diaphragm* 5 *Plate* Forbes

Subject Interior of library.

Remarks Got a very fair negative.

Holder, 1.

NO. 1. [Torn off and put on plate.]

Last year while on my canoe cruise through Pennsylvania, I made about a hundred exposures, and with one exception knew exactly what I was going to develop when I removed from packing box. The one exception was where the coupon dropped off the glass.

Hoping this may be a help to some other amateur cranks, I remain,

Yours, etc., Dudley J. Greene.

[*From Photographisches Wochenblatt.*]

CONSTANTS IN PHOTOGRAPHIC OBJECTIVES.

BY F. STOLZE.

A question lately put to me about this subject induces me to give here a more detailed explanation. The question was the following:

"On pages 115 and 116 of the *Wochenblatt*, much is said about first and second principal focus, optical and geometrical center, determination of focal distance, etc. I cannot comprehend why the focal distance should not be equal to the distance of the center of the lens from the ground glass, as all rays cross in the opening of small diaphragms, which I should think is the condition for the determination of focal distance. I would like therefore a generally comprehensive explanation about this."

Combining certain other inquiries with this, I feel convinced that a misunderstanding based upon the above view of the subject has a much wider circulation than one would ordinarily believe.

The idea seems to predominate that the rays coming from different points into the camera, when focusing at an infinite distance, describe such a path that it is only necessary to prolong them until they cross each other to thus obtain at the same time the converging point of the rays, the optical center of the objective, and in the distance of this point from the ground glass, the focal distance of the objective. Nevertheless these conclusions are wrong without exception, as I will try to demonstrate.

At first it is quite clear that the focal distance of a lens system depends in reality only on the form and the material of the same, and that differences in the diaphragms exercise but a small influence upon this, which results more particularly in the curvature of the field of vision, in the degree of sharpness, and the even distribution of the latter towards the margin. Taking the most simple photographic lens system, the landscape lens, and observing the influence exercised by the diaphragms, one will arrive at surprising results, appearing most clearly when the opening of the diaphragm is very small and its distance from the lens very great. One can comprehend at once that the converging point of the rays, which must lay in the diaphragm-plane, moves from the lens at the same time that the diaphragm does; while the focal distance is not materially influenced, and remains even exactly the same for the center of the picture. Considering now that the relative size of a picture furnished by a lens system is necessarily dependent upon the distance of the converging point of the rays from the sensitive plate, the highly interesting and important conclusion is arrived at that the relative size of pictures by photographic objectives depends only conditionally upon the focal distance of the same, and that it depends rather approximately upon the distance of the diaphragm from the plate.

For the practical photographer this distance is therefore ordinarily more important than the focal distance, which he is always used to determining practically. To this may be added that in double achromatic lenses with central stops, both values do not differ so much from each other. But in single lenses the difference appears much larger, the variation from the focal distance differing approximately in proportion to the distance of the diaphragm from the lens. I say here approximately, because if the focal distance from the lens cannot be exactly measured, there will be a similar difficulty in determining that point, upon which the relative size of the pictures depend. A short reflection will show that it by no means agrees with the converging point of the rays, which, being refracted through the lens towards the optic axis, it is clear that their actual converging point must lay nearer to the sensitive plate upon the axis, than the point, laying likewise upon the axis, where the rays within the camera would cross in their backward prolongation.

But this point, which I shall designate as the picture's center point, and which therefore lays still a little in front of the diaphragm, as well as its distance from the sensitive plate, designated by me as the picture distance, is the one upon which alone depends the relative size of the picture. This picture distance should therefore be mentioned in all tables of photographic objectives in place of the focal distance, it alone being of value to the photographer.

The so-called methods for determining the focal distance at the photographic theodolite are likewise without exception methods for determining the picture distance, as the size of the picture depends upon the picture distance. What therefore is this focal distance of a photographic objective? To explain this I have to go a little further back. Suppose the axis of the objective is directed towards a distant illuminated point; this latter will throw a cone of rays upon the objective, the extremity of which is in the point whose base lays in the plane of the objective, and whose rays may be considered as almost exactly parallel. But by the refraction in the objective they are now made convergent, so that they cross in one point of the axis, which is called the focal point. While therefore for the focal distance the average point of rays coming from the same object is determined by the sensitive film, the picture distance depends upon the converging point of rays coming from different points in the objective; or, more exact, upon the situation of the point from where the same cross, if prolonged backwards after refraction.

Of what practical value is now the focal distance of an objective? As good as none when single lenses are in question, approximately of some in double objectives with central stops where focal distance and picture distance do not generally differ very much. The conclusion to be drawn from this shows that a method for the determination of the picture distance is under all circumstances of much more value for the photographer than one for determining the focal distance. Having already published an exact method for the latter, it is but in order to give also one for the former. Perfectly sufficient for the purposes of most of the practical photographers is the following method.

The apparatus is arranged with vertical focusing glass and the focus drawn at an infinite distance. The smallest stop is inserted and the apparatus is now placed, without any change or different stop, focusing glass always vertically, in front of a building which conveniently admits the measuring of a considerable height H, so that this height covers the greatest part of the ground glass. The horizontal distance E of the ground glass is then measured from the measured height (through the objective) and a view is taken. The height upon this might be designated $= h$. We have then for the picture distance B with sufficient exactness the following equation:

$$B = \frac{h\ E}{h + H}$$

If for instance the measured height H on the building was = 10 m., the distance E of the same from the ground glass = 20 m., and the picture height $h = 0.3$ m., we would obtain

$$B = \frac{20 \times 0.3}{10 + 0.3} = 0.5825 \text{ m.} = 58.25 \text{ c.m.}$$

A very convenient method of measuring such heights on buildings is the following. From the window of an upper story a tape measure is let down and pretty well stretched. If both ends are marked properly they can be read off quite easily on the ground glass.

The apparatus must be carefully set up, if under all these conditions some exactness is to be the result. The focal point might also be marked on the bed of the camera to serve as a basis for other measurements, as for instance in enlargements. The camera has, of course, to be in good order.

Translated by H. D.

[*From Photographische Correspondenz.*]

THE APPLICATION OF HYDROXYLAMINE IN PHOTOGRAPHY.

BY DR. J. M. EDER.

Hydroxylamine (NH_2,OH) is a chemical compound only known for a short time. It was discovered by Lossen in 1865 among the products of the reduction of nitric acid by means of tin and hydrochloric acid. The behavior of hydroxylamine towards organic compounds was studied later on, particularly by Victor Meyer, and he found that it will give good crystalline compounds with aldehyde and ketones. But particular attention was given to the eminently reducing properties of this substance, which Lossen had already pointed out. It is a technical reducing medium, capable of resolving manganese dioxide into monoxide, and can therefore be used for the production of white patterns upon material dyed with manganese, as discovered by Schäffer.

Hydroxylamine can also be used in photography as a powerful developer for invisible images upon bromide and chloride of silver, as discovered by Egli and Spiller in London in 1884. Although its magnificent properties for the development of photographic pictures had been recognized, this compound has found no practical employment yet on account of its extremely high price, the crystallized chloride of hydroxylamine costing 800 marks per kilogram, according to purity.

Only lately means have been found to produce hydroxylamine at a cheaper rate, and the aniline and soda factory at Ludwigshafen on the Rhine produce it now in large quantities. It is furnished either in a weak acid, 12 to 14 per cent., aqueous solution (for cotton printing), or in the shape of pure crystallized hydroxylamine chloride, which serves particularly for photographic purposes.

Egli and Spiller give for the hydroxylamine developer for bromide of silver gelatine the following formula, which has also been recommend by Scolik:

A.

Hydroxylamine chloride	1 part.
Alcohol	15 parts.

B.

Sal soda	1 part.
Water	8 parts.

Before use mix 60 parts of water with 3 to 5 parts of A and 5 parts of B.

The developer gives to the bromide of silver gelatine plates a pure steel-gray color which resembles the wet collodion plates developed with sulphate of iron, and which, as is well known, insures quick and brilliant printing. The developer remains completely clear and colorless during use, in which it differs very advantageously from the pyro developer. If the plates have been exposed too long, a few drops of a solution of potassium bromide (1 to 10) or potassium citrate may be added to the developer as a retarder. The sensitiveness which can be produced by the hydroxylamine developer is equal to pyrogallic acid and oxalate of iron; but the color of the silver deposit is for several purposes of negative photography more favorable.

The price of the hydroxylamine developer is less than that of the pyro-soda developer. One liter oxalate of iron developer costs about forty pfennigs; one liter pyro-soda developer, twenty pfennigs; one liter hydroxylamine developer, twenty-nine pfennigs. One liter developer serves for the development of twenty double cartes de visite (13 x 18 c.m. size of plate). The development of one double carte de visite plate with hydroxylamine will therefore come to 1½ pfennigs.

C. & F. Darker develop handsome sciopticon pictures upon bromide of silver gelatine with

Hydroxylamine	1 part.
Caustic soda	2 parts.
Ammonium bromide	4 "
Water	480 "

It can also be applied, like sulphite of soda, to the blackening of the negatives intensified with bichloride of mercury.

Hydroxylamine is also available for the development of chloride of silver gelatine, with which magnificent transparent glass diapositives can be produced, which may serve for transparencies, for enlargements, and for lantern slides. For chloride of silver, which is more easy to reduce than the bromide, a powerful acting mixture has to be applied, and such a one is obtained by mixing the hydroxylamine chloride with carbonate of potassium or carbonate of soda. Such mixtures give (as found by Spiller, and confirmed by David and Scolik) a sepia-brown color to the reduced silver; the addition of a little ammonia makes the picture chocolate-brown. Ammonia only gives the picture a purple color.

The following formula is for diapositives upon chloride of silver gelatine according to Spiller:

A.

Hydroxylamine chloride	15 parts.
Alcohol	480 "

B.

Potassium carbonate	6 parts.
Water	8 "

C.

Ammonia	1 part.
Water	8 parts.

The chloride of silver plates are exposed for ten minutes in front of a gas burner (distance 1 foot) and developed in the following mixture: 1½ c.c. A, 40 drops B, and 30 c.c. of water; to obtain chocolate color 1 drop of C is added. Upon chloride of silver gelatine paper a mixture of 1⅓ c.c. A, 6 drops C, and 30 c.c. of water are said to furnish a warm brown tone. If 2 c.c. A are mixed with 6 drops C and 30 c.c. water, and a plate of five times longer exposure is developed with the same, chestnut-brown pictures are obtained, which after drying assume a deep purple color.

David and Scolik apply for the same purpose (diapositives upon chloride of silver gelatine) a mixture of

Hydroxylamine chloride solution (1 to 15)	30 parts.
Potassium carbonate solution (22 to 30)	4 "
Water	30 "

The particular peculiarity of the hydroxylamine developer is that the pictures remain white in the high lights, and that the reduced metallic silver in the picture film assumes a handsome color tone favorable for printing. There is hardly a doubt that hydroxylamine will be used pretty extensively in photography for the future.

Translated by H. D.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

AN ARGUMENT IN FAVOR OF ASSOCIATION.

By J. F. Ryder, *Cleveland, Ohio.*

It is natural to look to the metropolis for the highest achievements of excellence in photography. For many years past I have freshened myself with pleasure and new resolutions upon the occasions of my visits to the entrance-way exhibits and the studios of the famous photographers of New York,

It has been a help and a profit to me, as it has been to thousands of others who have taken the same free school lessons at the doorway. My last visit to New York was direct from the Chicago Convention exhibition, where what would be called Western work was greatly in excess. With that work fresh in mind I looked at the productions of men at the mention of whose names I have mentally taken off my hat. I looked this time without the enthusiasm of former visits.

I speak without prejudice, without a hint of discourtesy, and with sincere regret. In my mind the standard of excellence has declined, and I believe it would profit the New Yorkers to attend the exhibitions of the Photographers' Association. I do not mean this assertion to apply to all, but it will fairly include a number of the most prominent names in photography, men who look upon association conventions as hardly worth their while.

What strikes me in this significant fact is *the practical value of association;* the advantage in progress of our art growing out of free interchange of ideas and friendly strife for superiority in exhibition. It has been subject of comment that many photographers from comparatively obscure localities have suddenly stepped into prominence from the excellence of their work. We will find, if we choose to look into the possible cause of such progress, that those men have attended the conventions with eyes and ears open, and their growth in skill is a natural consequence.

We may all attend school to advantage in our art, not yet half a century old.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Rochester, N. Y., September, 1887.

To the Editors of the Bulletin.

The following rules and conditions governing competitions for the Blair Cup have been adopted by the Executive Committee.

1. No picture having been previously entered for competition shall be allowed to compete for this cup.

2. Nothing of an advertising nature will be permitted to be used in connection with this competition.

3. The award shall be decided by a committee of three, to be appointed by the Executive Committee.

4. The Executive Committee shall select a subject to be illustrated, and no other picture shall be considered eligible.

5. The Cup shall be awarded to the most meritorious photograph illustrating the subject decided upon the previous year.

6. The winner shall be the custodion of the cup until the next convention.

7. It shall be necessary for the cup to be won twice by the same person before it becomes his property.

8. In the event of the cup not being won twice by the same person after

having been competed for three times, it shall become the property of the association.

The subject to be used for illustration for our next convention has not yet been selected by the Executive Committee, but it will be announced as soon as decided upon. In the meantime I shall be glad to receive any suggestions from those interested as to the class of subject thought most desirable.

Respectfully, H. S. BELLSMITH,
Sec'y P. A. of A.

PHOTOGRAPHY BY MOONLIGHT AND KEROSENE LAMPS.

By JOHN A. FRITH, *St. George, Bermuda.*

[Presented at the Chicago Convention.]

ALTHOUGH I am a settled down photographer of twenty-one years' standing in these Islands, after a previous tour of eight years through the West Indies and Cuba, yet I continue to take a lively interest in the proceedings of your several conventions.

During the nitrate bath reign some years ago, I turned my attention to moonlight photography, using plates treated with tannin, but without results; I have often wished to hear of or see examples of work taken from negatives actually exposed at night, but with all the photographers that I have conversed with on this subject, both in the United States and transient people here, have always presumed moonlight photography to be an impossibility. After much careful thought, in February, 1887, I commenced to experiment with a view of solving the question; the result is that I can produce views taken from negatives exposed at night as clear as any negative exposed at midday.

The example inclosed marked No. 1 is a print from a negative exposed on the evening of February 8th from 8 till 11 P.M., full moon. Example No. 13 is from an exposure on the evening of March 9th, full moon, with a very thick permanent cloud concealing the moon from view during the exposure. The object of this picture was to try how sharp it was possible to photograph a building at night with the interior of the store lit with kerosene lamps. The result was that the key-hole of the lock was distinctly brought out, and a cambric American flag at the door of the upper story was very satisfactory to the American lady who occupied that portion of the building. There was too much light in one store, but in the center one, where the lamps were turned down, the result was satisfactory. There was not any light in the upper room with the flag intentionally arranged so that the light should not filter through it and destroy the effect.

Having solved the full moon mystery, I next directed my experiments to photography with the moon in the first quarter, and once for all I will state that the proper time to take the negatives for moonlight effects is when the moon is from seven to eleven days old, giving the same exposure as a full moon negative would require; then it will give positives with just the effect visible to the eye. No. 22 was taken on March 3d, the evening after the first quarter. It was very hazy; wind's force, 5; thermometer, 60 degrees; the shadow was in front. The exposure was from 7.45 to 9.50 P.M., just two hours and five minutes. The exposure was short by one hour in consequence of a circumstance over which I had no control. After fully developing and fixing the plate, it was immersed for a few seconds in a very weak bath of mercury and water, washed, and finally placed in a bath of very weak aqua ammonia and water until the negative reached the printing quality, which must be judged by the photographer's eye rather than by any written instruction or direction. You will notice that one of the front blinds is opened with a longer stick than the other. This was intentionally done by the owner in order that he would know the proof thereby. The lights inside are distinctly seen through the window where there were lights. The dry plate on which this negative was taken was not a very good one.

In operating at night I find it impossible to focus. Something must be focused in daylight about the same distance from the operator as he will then be from the object. I used an American lens, 3½ inches diameter, with a ¼ inch stop at midday to make similar positives. I used just whatever plates (American) I had in stock; in fact I am sure I can successfully expose at night any dry plate that will give good results in the day had I the different brands here to experiment with.

The proper time of exposures are: with ¾ inch stop, daylight clearness by full moon, 3 hours (dark landscape); moonlight effects on same, 2 hours; moonlight effect by first quarter, 3 hours (shadow in front, dark covered buildings); moonlight effect on light colored scenery, first quarter, 2¾ hours.

The developer for moonlight is

SOLUTION No. 1.

Carbonate of soda	2½ ounces.
Sulphite of soda	2 "
Bromide of ammonium	24 grains.
Water	72 ounces.

Sulphuric acid 1 drop in 1 ounce water and half of the quantity.

SOLUTION No. 2.

Pyro	1 ounce.
Alcohol	2 ounces.
Water	6 "

To 6 ounces of No. 1 add I fluid dram of No. 2.

Have a little patience; the negative will gradually come up with a dark night transparent aspect. Their appearance will disappoint you when finished. Do not hurry or force them if possible. They will print quickly and good.

By following my directions as to developer, focus, stop, and length of exposure according to effects desired, I am satisfied any practical photographer will succeed, and I sincerely desire will send me a few of their examples.

No. 14 is an interior by kerosene lamps. To be successful the lamps must not be in view of the lens. Examples printed from negatives with the room illuminated by the lamps on the several tables, developed the part near the lamps overexposed. To obviate this difficulty I placed two lamps on the floor and two in chairs in one corner of the room behind a very coarse cotton screen, thereby giving an equally divided filtered light over the room. The exposure was four and one-half hours, 3½ inch lens, ½ inch stop.

It is not absolutely necessary to work with a curtain or screen, provided the lamps are not visible through the camera without it, and the exposure is shorter.

Example No. 23 is from an exposure on April 25th, beautiful bright starlight and a very young 48-hour moon for a short time. This negative has more intrinsic photographic value, scientifically, than any other exposure, as it is really a starlight exposure. The shallow water between the two small islands over the ship chimney is not only distinct, but a flag-staff and houses on the most distant hills, four miles from the camera, are visible. The foliage and houses in the front have a peculiar shade that will be impossible to produce by daylight. The exposure was six hours, with ¾ inch stop.

Example No. 24 is an exposure on April 30th, with the same plates as No. 23, first quarter of the moon, shadows in front, very dark green foliage in a valley. The exposure was 2½ hours, ⅞ inch stop. Had I preferred to make this picture with the light reflecting on the scene instead of against the light, the picture would have been as clear as a daylight exposure. The negative requires as much time to print from as negatives taken in the usual daylight and full of detail. I can assure the photographic fraternity that the most beautiful photographic effects, soft and artistic, can be made by moonlight.

THE BULLETIN has been my quiet and efficient assistant, prepaid yearly, since it has had an existence.

W. H. LOCKHART.

HYDROKINONE AS A DEVELOPER OF DRY PLATES.

BY C. E. VON SOTHEN.

[Presented at the Chicago Convention.]

The various possible, and alas, oftentimes also nearly impossible forms of developers which, from the first practical application of the gelatine dry plate process up to the present day, have from time to time been brought forward, would fill many a page of photographic literature, and upon the experimental photographer has devolved the task of learning from careful and practical tests the characteristic qualities of each individual formula; of determining the amount of advantage gained from applying the one or the other, simple or modified, to certain special purposes; and of deducing therefrom the relative value as to general or special usefulness of the many different mixtures and components. The work, though highly interesting, has been arduous and difficult. A golden kernel of wheat has been brought to light out of an abundance of worthless chaff, and too much praise cannot be bestowed upon such men as Captain Abney, Dr. Eder, Carey Lee, and many others, for the invaluable services which, through their untiring energy on the field of photo-chemical research, they have rendered to our beloved profession. Yet with all due appreciation of these scientific investigations and the many valuable discoveries to which they have led, it appears to me that no line of research in photographic chemistry has brought less tangible benefit to the practical photographer than the dry plate developers; ferrous oxalate and alkaline pyro, in more or less modified form, being to-day, as they were five years ago, the only reducing agents in practical use with more than ninety-five per cent. of all the photographers on the globe. Here then seems to be a chance for the introduction of something comparatively new, and on that ground I hope to be pardoned—this being my first publicly committed offense in this direction—for bringing to the notice of this Convention a developing agent which, though photographic periodicals have once or twice mentioned it, and though its name, hydrokinone, is undoubtedly familiar to many, is actually so very little known, that a few words in its favor may perhaps tend to bring it into more general use, and eventually gain for it the appreciation which it so highly deserves. The chief reason for its present lack of popularity is probably its rather high price, but were its excellent qualities better known, I have no doubt that its apparent expensiveness would no longer deter photographers from engaging its valuable services, for in the end hydrokinone will prove just as cheap as pyro, and perhaps more so than ferrous oxalate.

Hydrokinone (C_6H_4,OH_2), a derivative of cinchonin, is an hydrocarbon of a composition similar to that of pyrogallic acid (C_6H_3,OH_3), and its proportions also bear a strong resemblance to those of this, our most important oxidizer. Its capacity as an oxygen absorber is even greater than that of pyro, the comparative energy of my normal developers being as nine to seven in favor of hydrokinone. But this affinity for oxygen is not as greedy as that of pyro, and its action is therefore less violent and under better control, and in this property of applying its great reducing force slowly, gradually, without unnecessary waste and without exhausting its strength from the outset, I find the chief advantage of hydrokinone over pyro. Its developing action, as said before, is necessarily slower, but on account of the great constancy of its reducing power, marvelously effective, every molecule of the exposed film, no matter how feeble the impact of light, having to submit in due time to its persistent and apparently untiring energy. Its keeping qualities too, whether in stock solution or mixed developer, are excellent. I have a case on record when with six ounces of developer, containing 36 grains of hydrokinone, I developed 5 x 8 plates, transparencies and line-work negatives, without any addition whatever, by merely slightly increasing the time in the camera, after which the mixture was bottled, and served as an excellent "starter" for several subsequent exposures. A patent rubber-stoppered beer bottle full of the stock solution, put up on January 5th and kept in a dark room at a temperature varying from 50 to 90 degrees F., is to-day almost colorless and as good as when freshly mixed. Hydrokinone is but sparingly soluble in cold water, fifteen grains per ounce being about a saturated solution, but this is amply sufficient for practical use.

Another excellent quality of hydrokinone is the beautiful tone of its deposit, a fine, velvety engraving black, and a magnificent clearness of shadows, which for transparencies, lantern slides and line-work negatives especially, is unequaled by any other developer of my acquaintance. Alum and restrainer are unnecessary. The addition of bromide changes the tone to a rich brown, but it should be made very cautiously, as the addition of a ten per cent. solution will exercise quite a perceptible retarding action and render the mixture rather unfit for future use. A few drops of a one per cent. solution of hypo will to some extent restore the energy of the developer, but such doctoring is, at the best, somewhat hazardous. My formula, which after much experimenting I have found after more than four years' practice to be thoroughly reliable and in every respect satisfactory, is as follows:

SOLUTION No. 1.

Soda carbonate	50 grains.
Water	1 ounce.

SOLUTION No. 2.

Hydrokinone	12 grains.
Soda sulphite	60 "
Water	1 ounce.

For use mix

No. 1	1 ounce.
No. 2	2 ounces.
Water	1 ounce.

The water is added either warm or iced, according to the season, in order to give to the developer the proper temperature. The image will make its appearance rather slowly, on a properly exposed plate in about two or three minutes; but, once started, development will proceed rapidly and progressively to the attainment of the finest detail and any required density. The film will never become stained under the most protracted development, and, owing to the strong tanning action of the hydrokinone, frilling, even in warm solution, is exceedingly rare. The same conditions that govern pyro development with regard to intensity and detail, hold good in the case of this reducing agent, an increase of hydrokinone giving strength and dilution producing detail. The amount of alkali in the formula given above being already large, I do not favor an increase of it with a view of forcing up detail, my mode being to obtain the proper intensity first and then, if required, finishing up for fine detail in water made slightly alkaline with soda carbonate. The plate is, of course, transferred to this without washing.

I hope that some of the fraternity may give this developer a thorough trial and succeed with it as well as I have done.

AN AMERICAN METRIC SYSTEM.

BY A. ST. CLAIR.

[Prepared for the Chicago Convention.]

AFTER a number of introductory remarks upon the French metric system, the author speaks of his own particular system as follows:

For a hundred years learned men have tried to force the French language on the nations as the grand official language of the world, and they have failed. Now a new idea has arisen, and a German philologist has invented a new universal language which scientists are trying to master and hope to see adopted, not as a common every-day language throughout the world, but an international language to be learned by all nations as a medium of official communication. This new language has been christened "Volapuk," and its grand recommendation is its non-nationality. A large proportion of its words, like its name, are of new and special coinage. They have no other meaning than the one given in Volapuk, which is the rock on which the whole superstructure is to be built.

This is precisely the basis I proposed (over three years ago) for an American system of metrical weights and measures. Before publishing I explained it to a number of educated men, especially physicians and pharmacists, and every one, without an exception, promptly gave it their approval. The president of a medical college called on and congratulated me on the conception of so grand an idea, and the editor of a medical journal requested me to give it to him for publication, and when it appeared no objections were offered, but many hopes expressed that the idea might become popular.

In November, 1863, I published a synopsis of my plan in the *St. Louis Photographer*. My idea was to combine comprehensiveness, simplicity and originality. This I proposed to accomplish by coining a series of new words of three letters only, one vowel and two consonants, the vowel to be placed between the consonants. Seven such words would be required to represent the idea at present expressed by

Length or distance: as an *inch,* a *mile.*
Weight: as an *ounce,* a *pound,* a *ton.*
Capacity, dry: as a *peck,* a *chaldron.*
Capacity, fluid: as a *pint,* a *barrel.*
Surface measure: as a *square foot,* an *acre.*
Cubic measure: as a *cubic foot,* a *cord.*
Number: as a *dozen,* a *score,* a *hundred.*

Taking this word of three letters as the root, I propose to consider it as representing the unit one; then increase it to ten, one hundred, and one thousand, by prefixing one of the vowels a, e or i, and to reduce it in same ratio by affixing the vowels o, u or y.

Suppose, for illustration, we take the word tek as the root; then with prefixes and affixes it will form seven distinct words, each having a distinct and recognized meaning, and only that one meaning. This will be plainly seen by the

ILLUSTRATION.

Itek.	Etek.	Atek.	Tek.	Teko.	Teku.	Teky.
1,000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

I used the letters yad in illustrating the idea in the November issue of the *St. Louis Photographer*, which stirred the risibility of a certain Chicago editor, who saw in it the title of an Indian princess. Yad, I afterwards learned, is the Scotch name for an old horse. Not wishing to offend my sensitive critic and break my own condition, that each root and all its six derivatives shall be absolutely new, I choose the letters given above. If any one thinks it a simple thing to coin forty-nine new words, seven of three letters and forty-two of four letters, according to my conditions, let him try it. The conditions are as follows:

Seven new words of three letters each, the vowel to be placed between the consonants. No two of the seven words to begin or end with the same letter. None of the prefixes or affixes to change the root to a word now in use in the English language.

We have thus got a root and compounds carrying us up to 1,000 and down to $\frac{1}{1000}$. To raise the number we have but to say such a number or such a fraction of any given denomination. It seems simple to make this explanation, but one of the objections raised was stated in these words: Well you have got a thousand (teks), how are you going to express a higher number. The reply is, this one itek is equal to a thousand teks; if you want 10,000 iteks say so; and if you want the one-millionth part of a teky, state just what you want. It is just as easy to ask for twenty-five eteks as twenty-five bushels.

By way of illustration, take the words tek, gam, mef, zan, dap, yex and nal. Give the vowel sounds as follows:

A as in far.
E as in met.
I as in pin.
O as in no.
U as in the diphthong blue.
Y as in by.

These words have no meaning and are simply used for illustration.

Now suppose we say

Tek shall mean the measure of length.

Yex the measure of weight.

Nal the measure of number.

Dap, surface measure.

Gam, cubic measure.

Mef, dry measure.

Zan, fluid measure.

Can you imagine any nation under the sun whose children or adults could not articulate these sounds just as easily as they can say ha or bo? As they would represent an idea, but not a nationality, could the same objection be raised against them that the German raised against the French system, "Curse it, its French, and I hate it for that reason."

One of the critics objects to yad because it is an unmeaning sound. That is the very idea I am advocating. Besides, all words, until their meaning is learned, are unmeaning sounds.

We want the metric system. The French system is based upon a good standard, the best yet adopted. While somewhat defective it is nevertheless quite practicable. The great objection is its nationality, and the difficulty of correct pronunciation.

Suppose we follow the example set in Volapuk, and first denationalize the nomenclature by coining new terms, and then remove the second objection by making the new word so simple that he who runs may read.

Suppose our Convention to agree upon such a system, and all its members adopt it. Within three months it would be known wherever the English language is spoken, and also throughout France and Germany. Immediately after the close of the Convention the new weights and measures would be thrown on the market for photographic use. The druggists would accept the new departure, and physicians' prescriptions would be written with the new characters, which would be the first letter of each name. A physician's prescription would read something like this:

R	Castor oil	Z (ans).
	Milk	Az (an).

Mix, etc.

which would be about the proportion of

R	Castor oil	half an ounce.
	Milk	half a cupful.

By taking the French gram as the unit standard both of weight and measure, as that system does, a formula given by it could be changed into this system instanter. 30 grams would be 30 yex or 3 ayex, while 300 cubic centimeters would be 300 zans or 3 ezans, and 2,000 square centimeters would be 2 idaps.

Ladies and gentlemen, fellow workers in our grand art-science, take this matter into consideration. For twenty odd years this French system has been legal in this country, yet we have not adopted it. How long shall we halt between two opinions? Let us either adopt the French system with its hectoliters, its decigrams, its square millimeters, and its cubic centimeters, which will send us all, gray-beards and bald heads included, to school to learn Greek, Latin and French; or else adopt a nomenclature, which, like Volapuk, will, if adopted by you, become universal. Rome, once the most powerful of nations, gave us an alphabet which will eventually supersede all others, but her numerals have gone out of use. Arabia is hardly known amongst the nations, but her ten numerals are now used by every civilized nation, and will continue to be so used until time shall cease to be and ciphering is no longer needed.

So it is in this case. France has given us a system of weighing and measuring adapted to all the present wants of science, but burdened with an objectionable nationality and nomenclature. You can adopt her system, adapt it to a new nomenclature utterly denationalized, and thereby secure its adoption by the entire civilized world. Will you do it?

[*From Art Amateur.*]

HINTS ON LANDSCAPE PHOTOGRAPHY.

BY GEORGE G. ROCKWOOD.

RECENTLY I have commented on various points connected with portrait lighting. Of course light and effect in landscape are not less important. Many amateurs see beautiful scenes in nature, and, without thought of choice of ground, point of sight, or of management of light, expose their plates, hoping to record what they see. Naturally, the results are disappointing. In nature we must seek effect and pose, so to speak, as in portraiture. A landscape should, as a rule, be photographed with the shadows toward the instrument, not the reverse, as is customary with most operators. I put this in general terms that it may be more readily understood. The broad illumination of an entire view by the noonday sun gives, as will be seen at once, a flat, shadeless, and, consequently uninteresting picture. Therefore it will be seen that it is not at all times of the day that a view may be taken—nor, indeed, on all days. One summer, for three weeks, I rose every morning at four o'clock in order to photograph a certain view free from mist, and with the shadows just as I desired them to be. Finally, I secured the negative. Attention being once called to the fact that landscapes without shadows are meaningless, the seeker after the beauties of nature will soon learn, from the results of his own observation, to select the best hours for his work.

The securing of the right point of view is also of great importance, both as to determining the right elevation and the point of observation horizontally. If too high the line of the horizon is raised too much, and one has a vast expanse of possibly uninteresting foreground. It is an inflexible rule in landscape representation, whether by the brush or camera, that the line of the horizon should never be just midway between the top and bottom of the picture, and thus divide it into two equal parts, but always either above it or below it. Then, as one goes to the right perhaps the view is widened out and the objects separated and depressed, while a few steps to the left would reverse the order of things and pile up in picturesque combination the objects sought. Oftentimes the villainous telegraph line and pole intrude upon the scene, when, by a little management in choosing the point of view, it might be hidden behind trees, or in some way confused with other lines or objects in the view, and so partially, if not wholly, concealed.

Foregrounds may be regarded as the key-notes to landscapes, and should be chosen or arranged with consideration for their effect on the whole. If objects cannot be utilized, shadows may aid one in breaking up the monotony of the foreground and imparting effect by contrast. Of course these can only be secured by a choice of time that will give such shadows, although, of course, the points of compass may be in such relation to the view as to render it out of the question at any time. But there may be a friendly log, rock, stone, bush, or some characteristic object, which a pair of stout arms, aided by a willing spirit, will transport to some telling spot and make a division of the foreground by breaking up its level and uniform character.

Figures should be characteristic of the landscape. The carefully dressed "citified" person has no place in a rural scene; but the barefooted boy, the sun-bonneted rustic maiden, or the husbandman with scythe or sickle will generally lend interest to the picture, unless the figure is so posed as to appear to be sitting for its portrait. Never let your model look at the camera. That would be fatal to the result; for, from being merely accessory to the landscape, he becomes the central object, and the view becomes secondary. So in placing figures do not let them be obtrusive. Never pose them in the center. Generally let them be looking in such direction as might suggest the idea that they too are enjoying the beauty of the view, or are unconsciously contributing to the interest of the composition. If the figure can be doing something so much the better; let him be hunting, fishing, or even walking, if he can be made to appear to do so naturally.

Carriages are as much out of place as the carefully dressed "citified" person; but an old hay-laden cart or rustic market wagon may be so placed as to add greatly to the picturesqueness of the scene.

Distance should, when practicable, be so treated as to avoid bringing the salient light in the center of the picture. The predominance of a glaring object of any kind in the middle cuts the picture in two and destroys all unity. So let the camera be placed considerably to the right or to the left. Be careful of excess in this matter, however, or the balance of the picture may be very much disturbed. One side of the picture, for instance, may be over-weighted with objects while the other side may be almost bare. In photographing, of course, one cannot indulge in full artistic license, for the objects are before us often in such shape, arrangement and light, as to render it impossible to change or modify them in the slightest degree; yet one who is on the alert for the best results, and brings to his work some knowledge of general art principles, especially of composition, has an immeasurable advantage over the merely mechanical photographer. The exquisite pictures by Robinson, of Tunbridge Wells, and Sutcliffe, of Yorkshire, are the results of a thorough knowledge of art principles, combined with technical experience and patient enthusiasm. Each of these gentlemen will devote days, sometimes weeks, to the production of one negative. In this busy land of ours, where we do everything in a hurry, this sort of thing seems impracticable; yet surely it were better to get one result with positive artistic merit than to secure a dozen or more hastily selected and uninteresting views.

Concerning lenses, I would suggest that the long focus rapid rectilinear style should always be used. These seemingly give the nearest effect to that which is obtained by the human eye. The wide angle strains the laws of perspective, and proves that photography at times will lie, in spite of the oft-quoted saying to the contrary.

[*From American Journal of Science.*]

IDENTITY OF THE PHOTOSALTS OF SILVER WITH THE MATERIAL OF THE LATENT PHOTOGRAPHIC IMAGE.

BY M. CAREY LEA, PHILADELPHIA.

In the first part of this paper (page 370) I described certain strongly colored forms of silver chloride, bromide, and iodide obtained independently of any action of light, for which I proposed the name of photosalts by reason of their identity with the products of the action of light on the normal silver haloids, both with the substance of the latent image itself, and also with the principal results of the continued action of light on these haloids. It remains to prove this identity.

First, as to identity with the products of the continued action of light.

If we expose silver chloride precipitated with excess of HCl to light, we get a deep purple-black substance which, boiled with dilute nitric acid, gives up a little silver, at the same time somewhat lightening in color, and forming a dull purple material which closely resembles some of the forms of photochloride described in the first part of this paper; mostly those produced by the action of sodic hypochlorite or of ferric chloride on metallic silver. It shows the same reactions with ammonia that they do. The brighter colored photochlorides are not formed by the action of light on silver chloride.

But these brighter colored chlorides can also be shown to be formed through the action of light. Most salts of silver darken by exposure, and when these dark products are treated, first with HCl, and then, after thorough washing, boiled with dilute nitric acid, we can obtain results perhaps as varied as those which I described in the former part of this paper as arising from purely chemical action.

Silver oxalate exposed for two days to sunshine, covered with water, and with frequent agitation, changed to a deep brownish-black, which by treatment with HCl became a little lighter. When this product was washed and boiled with strong nitric acid, it acquired a fine deep copper-red color, the acid taking up silver. This red substance dissolved in ammonia readily, leaving a small amount of blackish residue; the same with sodium hyposulphite.

This examination, made a year ago, has recently been repeated, with a view to obtaining a quantitative determination of the proportion of Ag_2Cl contained in the red product. The exposure was for about a day; the oxalate at the end of the exposure seemed absolutely black. After treatment with HCl it assumed a purple-black shade. After thorough washing and boiling with dilute nitric acid, which removed a large quantity of silver, perhaps twelve or fifteen per cent. of the entire quantity, it had a fine lilac-purple color. Analysis showed that it contained about one-half of one per cent. of subchloride, or, more exactly, 0.45 per cent. Ag_2Cl was found.

The red chloride thus obtained from silver oxalate not only closely resembles the red chloride obtained by means exclusively chemical, but shows the same behavior to reagents.

Treated with ammonia it dissolves, leaving a black residue. The formation of this residue takes place precisely in the same manner with both substances. As fast as the material dissolves the liquid becomes clouded, and an extremely fine black substance seems to form within it, which gradually falls to the bottom.

Treated with solutions of the alkaline haloids, the red chloride derived from exposed silver oxalate remains unchanged after twenty-four hours' contact with potassic chloride, and becomes paler and more lilac under potassic bromide; under potassic iodide becomes gray. These reactions correspond with those of the photochloride.

Silver phosphate belongs to the more sensitive silver salts, and easily darkens in sunlight. In a few hours it becomes greenish all through, after which further exposure produces little visible effect. This product becomes with HCl quickly gray, and by treatment with nitric acid, after washing, light pink.

Silver tartrate by exposure to sun became quite black. With HCl this changed to reddish-gray or dull pink. This product, well washed, and let stand with cold nitric acid, 1.36, became first lavender, and then light pink.

Silver carbonate by prolonged exposure became greenish-black, and with the above treatment yielded a dull pink photochloride.

Silver pyrophosphate, even by several days' exposure to winter sun, did not blacken, but assumed an ocherous or buff shade. With HCl this passed to a sort of salmon-pink, and by heating a few minutes with dilute nitric acid to a beautiful copper shade.

Silver acetate was singularly little affected by sunlight. It looked blackish, but on closer inspection was found to be very little altered. By the same treatment as above it yielded a pale pink photochloride.

So far as examined, all silver salts thus treated yielded pink or red photochloride.

These facts may serve to show the identity of the photochloride with the principal product of the continued action of light on silver chloride, and on other salts of silver subsequently converted into chloride. I should wish, however, to use this word identity in a somewhat limited sense. When the photochlorides are formed by different methods without the aid of light, hardly any two forms can be considered absolutely identical. They differ in color and in proportion of subchloride, as already often mentioned, and they also differ in other respects, especially in resistance to reagents. Some forms are far more easily destroyed by nitric acid. Those obtained by the action of sodium hypophosphite (as presently to be described) are amongst the most easily destroyed by nitric acid. There is variation too in the degree of their resistance to ammonia.

Very similar differences are found in the stability of the photochlorides obtained by the action of light. Some are much more readily attacked by nitric acid than others. The product obtained by the action of light on silver chloride resists ammonia more strongly than that obtained by the action of HCl on exposed silver oxalate. This last is quickly attacked. Generally, I think, the dark-colored forms are the most staple. At a future time it may perhaps be possible to distinguish more exactly between these varieties.

I next pass to the consideration of the identity existing between the photosalt and the material of the latent image. Before entering, however, on that matter, it is necessary to describe a reaction leading to the formation of these photosalts, somewhat differing from the reactions already mentioned, and which has an important bearing on the subject.

The remarkable action which an alkaline hypophosphite exerts on salts of copper was described many years ago by M. Wurtz. Its action on silver salts, though there is no parallelism between the two, has enabled me to find a key to some of the great difficulties of the latent image.

A dilute solution of sodium hypophosphite, if poured over a mass of chloride, bromide, or iodide of silver formed in the absence of light, produces no visible effect, but has the property of bringing these substances into the condition in which they exist in the latent image. Applied in strong solution and with the aid of heat, it produces brown-purple photochloride, bromide, and iodide of silver. I will here briefly describe the first of these compounds in order to continue the series of photochlorides, and then pass to the consideration of the latent image.

PHOTOCHLORIDE OF SILVER BY SODIUM HYPOPHOSPHITE.

Silver chloride freshly precipitated with excess of HCl and well washed, placed in a flask with a strong solution of sodium hypophosphite and heat applied, begins to darken before the boiling point is reached. Actual boiling for ten or fifteen minutes gives a deep chocolate color. This product, well washed and freed from traces of metallic silver by cautious boiling with very dilute nitric acid, has a pink, red, or brown color, varying in intensity according to the length of the action. Sometimes a lavender shade is produced, and this is more apt to be the case when the silver chloride has been precipitated with excess of silver nitrate instead of excess of HCl.

Silver determinations of two specimens of the purified product were made, indicating the presence in one specimen of 1.77 per cent. of subchloride, in the other of 3.53.

By the continued action of heat for many hours, a complete reduction to metallic silver takes place.

Photochloride obtained in this way has generally a brown or dull purple color. Boiled with nitric acid it is apt to break up in as many minutes as some other forms would require hours for decomposition, yielding white chloride, whilst the nitric acid takes up small quantities of silver.

IDENTITY OF PHOTOSALTS WITH THE MATERIAL OF THE LATENT IMAGE.

It is proposed here to show:

First.—That in the entire absence of light, sodium hypophosphite is able to affect a sensitive film of silver haloid exactly in the same way as does light, producing a result equivalent to a latent image formed by light, and capable of development in the same way as an actual impression of light.

Second.—That these two effects, the impression produced by hypophosphite and that by light, comport themselves to reagents exactly the same way, and seems every way identical.

Third.—That the image produced by hypophosphite on silver chloride always gives rise to a positive development, but on silver bromide may give rise either to a direct or reverse image, both of these effects corresponding exactly with those of light. More than this, sodium hypophosphite may be made to reverse the image produced by light on silver bromide, and conversely, light may be made to reverse the action of hypophosphite. So exact a correspondence in these remarkable properties can scarcely be fortuitous.

I.

A silver haloid formed in the absence of light, and subjected to the action of sodium hypophosphite, gives rise to the gradual formation of subsalt, which combines with the normal salt in the manner described in the previous part of this paper. This action of the hypophosphites closely corresponds with that of light. In its initial stages it is invisible, but can be brought out in both cases by development.

If we form a film of chloride, bromide, or iodide of silver, and with a glass rod dipped in a solution of hypophosphite make marks upon it, these marks can, with the utmost ease, be developed in precisely the same way as an image produced by exposure to light.

A very simple mode of operating consists in imbuing photographic paper with a solution of an alkaline haloid, drying, applying a silver solution, and then thoroughly washing, all of course with careful exclusion of active light. If the silver solution is acidulated with nitric acid, a drop to the ounce, the result is brighter, but this is not important. In any case the washing must be thorough.

Marks made on this paper can be developed with the oxalate developer with the utmost facility. If a strong solution of the hypophosphite is applied cold, it may be washed off at the end of a minute; but a stronger impression is obtained by allowing it to wait half an hour before developing; or the action may be accelerated and increased in strength by laying the freshly-marked paper on a hot surface; or, better, by steaming it before applying the developer. A convenient mode of steaming it is to lay two pieces of glass on a small water-bath, kept boiling, with a space between them. Over this space the paper is rested for two or three minutes. Paper prepared with a solution of KCl, KBr, or KI, dried, and floated on acidulated solution of silver nitrate, and well washed, if marked with strong solution of hypophosphite and steamed for two or three minutes, will develop the marks as black as ink on a white ground. The use of heat simply gives a blacker development; but a very vigorous image may be got without.

A similar result may be obtained by substituting for the hypophosphite a dilute solution of potash and an oxidizable organic substance. With milk-sugar the action is very energetic, and heat is quite superfluous.

Both these are the initial steps of reactions which, when prolonged, result in the visible formation of the colored photosalts. It is a matter of interest that sodium hypophosphite, which produces the above-described effects, has no developing power whatever.

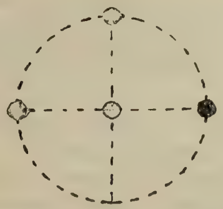
(*To be continued.*)

[*From the Journal de L'Industrie Photographique.*]

PHOTOGRAPHY WITHOUT A LENS.

We have at different times spoken of photography without a lens. To-day we call attention to a small plate in a camera, the invention of Messrs. Dehors and Deslandres, which gives with great simplicity views of large dimensions, exact and clear, and permits of obtaining simple views or stereoscopic pictures.

Fig. 1.



This plate or disk is capable of being adapted to all cameras. It is pierced with three circular apertures placed in a triangle (Fig. 1), one aperture in angle of the apex of the triangle and the other two in the angles of the base. It is covered with a rotating disk of metal perforated with six symmetrical holes, two and two (Fig. 2), giving three different openings. The holes of No. 1 are 0.30 millimeter, those of No. 2, 0.38 millimeter, and those of No. 3, 0.50 millimeter in diameter.

With opening No. 1, the bellows of the camera are arranged so that the plate holder carrying the sensitive plate is 8 centimeters from the opening. The view obtained contains a large number of objects and small in size. With opening No. 3 the plate holder is placed so that the sensitive plate is 28 centimeters from the opening. The view in this case contains a much smaller number of objects than in the case of opening No. 1, but with more details.

Fig. 2

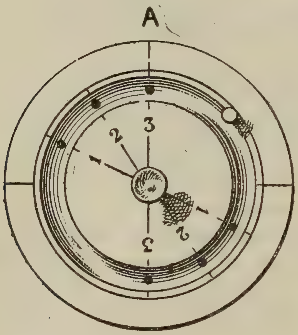
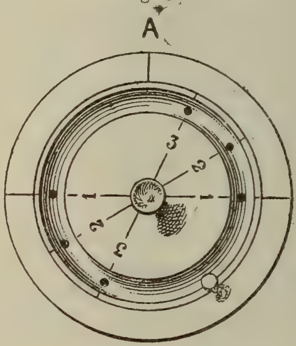
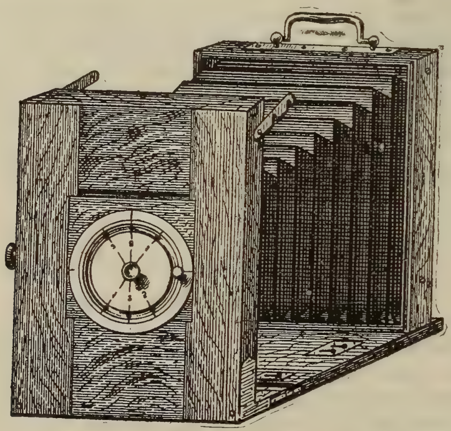


Fig. 3



With opening No. 2, the plate holder is fixed so that the plate is 18 centimeters from the opening, and the effect produced is intermediate between No. 1 and No. 3.



If simple views are desired, the opening selected to give the desired size of image is brought before the upper aperture of the plate.

If stereoscopic views are desired, giving the effect of relief in the pictures, the two symmetrical holes of the chosen size are brought over the lateral opening of the plate (Fig. 3). In this case it is necessary to place in the bellows of the camera a partition which divides its length into two parts. It is well also not to employ for these views the openings 2 and 3.

The time of exposure is sensibly the same in the three positions or distances: ten to twenty seconds for clear distant views, one to two minutes for near views in full light, and three to four minutes for near views poorly lighted. These figures are of course approximate, because they vary with the intensity of the light and the sensitiveness of the plates used. Furthermore the exposure may be extended without inconvenience, because of the feeble intensity of the images.

We have been astonished at the great number of objections that have been presented against the subject of photography without a lens. Remember that the advantages are numerous and considerable. By this method we are enabled to embrace an angle of 90 degrees or more, which permits the photographing of objects and spaces of large dimensions from short distances. The images obtained have a mathematical precision and do not present any distortion, qualities that are valuable for pictures of monuments, reproductions, and the reduction of drawings. Finally, all the objects are in focus at the same time, which allows of the omission of the ground glass and lens, and consequently all causes of fragility in the camera.

ELEMENTARY PHOTO-MICROGRAPHY.

BY ANDREW PRINGLE.

[Read before the British Photographic Conventioe at Glasgow.]

(*Continued.*)

Having now, at perhaps superfluous length, delivered a sort of apology for photo-micrography, I will proceed to practical matters.

The first thing to decide is what kind of objects we mean to tackle, or more particularly, what extent of amplification we mean to attain. My earnest advice is to "ca' canny" (*Anglice*, "drive slowly)" at first. Certain failure will follow temerity in this respect. The object for a first trial must be thin; lightly, if at all, stained but neither too opaque nor too nearly colorless. The objective should not be a higher power than one inch, while a two or three-inch glass would be preferable. The microscope eye-piece must not be used, as it entails certain difficulties and in some cases absolute failure.

A word or two about the objective, which is, perhaps, the most important part of the whole apparatus. Microscopic objectives made for ocular examination of objects, sometimes have their visual and chemical foci not in exact correspondence; a lens of this uncorrected kind is useless for photography. The fault may be remedied in several ways, but my advice is to get a properly corrected lens at first. It may have been Deil's luck attending me, but it so happened that the two-inch, the one-inch, and the quarter-inch with which I started were all faultless in this respect.

As to the light used. I prefer for simple work a paraffine lamp to other radiants. My start was made with a small cheap lamp of this kind, such as is usually sold with moderate-priced microscopes; my lamp had only a wick of about a quarter of an inch wide, but I recommend a wider wick, say one inch, and that used with its edge turned nearly straight towards the object. A multiplicity of wicks I consider a downright disadvantage; the smaller the area of radiance, commensurate with brightness, the better. I believe an arc electric light to be the best of all, but it is not needed for any such simple work as I am treating of now. An achromatic sub-stage condenser is another valuable aid for advanced work, but for our present purpose an ordinary bull's eye, called a "stand condenser," is sufficient. This is placed near the light with its flatter side towards the light.

My own first arrangement of camera, tube, object glass, and stage was very convenient for work with low powers, where searching for the object was a matter of ease. I will describe it in a few words and then pass it, for I found it rather expensive, somewhat awkward at times, useless for really higher power work, and excelled for any work by an arrangement which I shall afterwards explain, and one that finds favor with the best workers both for easy and difficult work. In my arrangement the microscope tube, with coarse and fine focusing arrangements, screwed into a cone fitted to the camera front, while the stage, with object clips and a rotating diaphragm with apertures, were fixed to the end of the tube by a bayonet joint. By this arrangement the diaphragm, object, objective, and tube were all axially centered on the ground glass center.

But there was no fixed arrangement for centering and keeping central the light and the condensers, and from that fact arose all my first troubles. In our work one of the first necessities is absolute centralization of the whole of the apparatus; without this no good can be done. It seems to be impossible to fix all the necessary parts centrally together without involving great difficulty in the operation of finding the object, and the best plan appears to be to divide the entire apparatus into two parts, the components of each part being fixed centrally, and then by means of a "stop" to insure centralization of the whole on the longitudinal axis when the two larger divisions are brought together and aligned by means of the stop. The best arrangement I have seen, and it is approved by good authorities, is one whereby the microscope tube, stage, object, condenser, and light are all centered on one base-board, while the camera runs axially centered along a short slot on a second base. The microscope base is pivoted on a center, so as to swing laterally, for a purpose which will soon be explained. The object is first staged and found with the microscope in the usual way; the condenser and light centered on the base, carrying microscope, stage, condenser, and light; and then the base carrying all these is swung round to the longitudinal axis of the camera, being arrested there by the fixed stop aforesaid. The camera is now pushed forward along the slot aforesaid, so that the end of the microscope tube projects into the camera and a light-tight junction is formed by means of black velvet or accurate fitting of the parts.

I know quite well that few of you will understand this very miserable description, and I have no means of offering you a drawing, but I propose to ask our good friends the press-gang to publish a drawing of the apparatus as made by a well-known London firm, Messrs. James Smith & Son. I believe the design is due to a considerable extent to Dr. Crookshank, who read at the Photographic Society in June last a paper on "The Photography of Bacteria." To describe that paper as "interesting" would be to "damn it with faint praise." Dr. Crookshank may consider himself responsible for an attack of temporary insanity, if not permanent bankruptcy, on my part.

We must now devote a moment to the camera. It should be a good strong camera, with a stretch as long as possible, for on the amount of stretch depends *cœteris paribus*, the amount of amplification. No swing backs of any kind are required; they are, in fact, better absent. The commonest make of wooden camera will answer, provided it will stretch and is strong and light-tight. For simple work and small amplification the ground glass of the camera usually suffices for focusing, but where very fine work is to be done with high powers the ground glass is too coarse. I have used two surfaces for focusing in such cases, in each case placing the prepared plate in a wet plate slide, drawing the shutter, removing the back, and focusing on the plate with its prepared side to the front. The first way of preparing a plate for this purpose is to rule a few lines (not scratches) with a diamond in squares on the face of the plate. This gives the very finest surface for very high powers and difficult subjects. A plate intermediate between this and the ground glass is prepared by just fogging a sensitive gelatine plate, developing and fixing it, and bleaching, if necessary, with mercuric chloride. This plan I found in a book; the author's name, I am sorry to say, I forget; it is a capital dodge. In all cases a focusing eye-piece will be required. I use the ordinary focusing ocular used in photography, but I am careful to have it itself carefully focused by examination of a small speck on a window-pane.

I think we are now in a position to suppose ourselves about to make a trial. It is well to arrange for a week's absence from the family circle, pay the household accounts, lay in a good supply of cooling drinks and a few pounds of tobacco, pay an affectionate farewell to the babies and a ditto embrace to the missus; for the new-born photo-micrographer is not much good to anybody till he has cut his first tooth. There is an irresistible and engrossing fascination in this work that cannot be escaped nor ever forgotten. When I began I did not for three weeks get beyond a distance of about fifty yards from my dark room. I was smitten as with a pestilence; a grim mania for new objects to conquer possessed me; I revelled in the very names of tubercles, Graafian vesicles, malignant tumors, sloughing *phagœdema*, tapeworms, bugs, fleas, lice, and nauseating skin diseases. The horse parasite was of more importance to me than the horse in the stable. My flowers suggested to me only the names of red spiders and aphides. Paring my nails became a polariscopic operation. I would have stewed a mouse for a single hair, stormed a bee-hive to get a sting, and I even excoriated myself for a specimen of *tinea versicolor*.

This however is not business, though it is truth. Nothing but common sense and experience can teach us to center our object on the ground glass and to focus it. The apparatus I have described ought to explain itself. It is necessary to know in the first place what points of our object we require to bring out particularly. I made several photographs of various objects before I discovered what were the parts that I ought to emphasize. In many cases I had actually to ask what the important part was. If we try to photograph complete objects on anything like a larger scale of amplification, we shall find optical difficulties almost insurmountable at the very outset. Our lens will want "penetration" or "flatness of field," and practice alone will teach us what our lenses will do and what they will not. "Penetration" is the equivalent of what we call "depth of focus;" "flatness of field" corresponds to same extent with our "covering power." The best plan is to begin with some very thin flat object of considerable area and fairly light color, and to find out to what extent we can enlarge it with a rather low power lens. We must find out once for all, to save trouble, the amount of our various amplifications. Here is the way to do this. Put a stage micrometer on the stage. The lines are drawn at distances of one-hundredth and one-thousandth of an inch apart on the micrometer. Focus the micrometer lines at the distance we intend to work at and with the lens we intend to use. Then measure the interval from one line to another on the ground glass, and a simple calculation will tell us our amplification. If on the ground glass the one-hundredth lines are exactly one inch apart, evidently the amplification is × 100; if quarter of an inch the amplification is × 25; if three inches it is × 300. I made measurements with all my lenses at all my distances, and wrote a list of the results, so that now at a glance I know the extent of my multiplications.

I soon found that sometimes, though I got my objects fairly well represented in my prints, I got poor gray backgrounds. I therefore proceeded to find out by experiment the exposures necessary to give black negative backgrounds when no object was on the stage. These results, too, I tabulated, and they now form a list of minimum exposures for the various lenses and distances. I found the whiter the light the better the background, so I recommend the addition of camphor to the paraffine in the lamp. I hope soon to discard paraffine entirely in favor of the oxy-hydrogen light.

So far as I have found out by the perusal of books on photo-micrography, the writers for the most part have been very good microscopists but rather shaky on photography, and so far as I have seen the producers of photo-micrographs of magnificent microscopic qualities have not been fully alive to the necessities of a photo-micrographic negative. What we want is not what we call in photography a good negative. We want for photo-micrographic work a negative that in pure photography would be called "flat." In short, we should sacrifice everything for sharp and full detail. Density in parts is no doubt very pretty and very artistic, and very agreeable to our notions, but it is out of place in a photo-micrograph. A photo-micrograph is a purely scientific production, there is no fine art about it, however much people may quibble on the matter; and we must put aside all ideas of balance, symmetry, pictorial composition, and chiaroscuro. What we want is material, not ideal. I spoiled a good many negatives by trying to make pretty pictures and good negatives according to usual acceptation. I am very fond of "Pictorial Effect in Photography" both to read and to practice, but we must ignore Mr. Robinson (forget him we can't) in photo-micrography.

There are two classes of objects which we may have to photograph. Class I, Dense, semi-opaque, highly colored. These sometimes cannot be photographed really well at all, but the line to follow is to use a rapid plate, ample exposure, and perhaps a tinted light of, say, blue color. These should be highly developed with small percentage of pyro. Class II, Colorless or very thin, but not transparent, objects. (There are many objects so clear that they cannot be photographed by direct light at all. I hope to say more of these next year.) For translucent, or thin, lightly colored objects, we require a white light, shortish exposure, and a slow plate giving contrast, which we may enhance by prolonged development.

Gentlemen, I have succeeded, as you will admit, in speaking a very great deal and saying very little indeed. I think I never saw an effort so successful in this line as my Convention paper. But I assure you I have not transgressed willfully; my mind was so full of my subject that, like a London street on a big day, my utterance got blocked. Next year, D. V. and W. P., I hope to address you on this subject in terms no less enthusiastic, but much more specific and useful.

OBITUARY.

GEORGE W. SITTLER.

We regret to have to record the death of George W. Sittler, the well-known photographer of Springfield, Mo. With his wife and family he was taking some recreation in a subterranean cavern, exploring its wonders, and in leaping from one point to another his head struck a stalactite, the point penetrating his scalp. He returned home, became delirious, went to bed, and after days of unconsciousness passed away at 7 o'clock on the evening of September 22d last.

Those who knew him best say: "He combined all the elements that ennoble mankind. He was honest, true, brave, kind, generous, honorable—all that makes man God-like. A true husband, father, and friend."

To his bereaved wife and family we tender our sincere sympathy in their great affliction.

OUR ILLUSTRATION.

The mosaic of pictures which we give as an illustration with this issue of the Bulletin is from the handsome exhibit of Mr. H. McMichael at the Chicago Convention of the Photographers' Association of America. These pictures are full of artistic beauty and tell much for the skill of the artist in posing. The fierce looking face of the Gladiator, with his expressive eye, is a wonderful piece of work. The Spanish Beauty is also a very effective picture. The Young Bride is an exceedingly graceful production and finely caught. The Prelate tells its own story; you can almost hear him say: "There is but one God and this is His revelation." The pretty picture of the Baby is one of Mr. McMichael's happiest efforts and is truly charming. Next we have the School-girl, with her jaunty hat and giddy air, also capitally caught; and we are told this was taken without a head rest in two seconds.

All these pictures tell of artistic study and speak more than any words of ours of the rising genius of our Buffalo friend. If any of our readers care to see prints from the original negatives we shall be very much pleased to show some kindly given us by Mr. McMichael and which are now decorating our office here.

ANTHONY'S
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EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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ON SOME AID RENDERED BY PHOTOGRAPHY TO GEOLOGY.

BY W. JEROME HARRISON, F.G.S.

PHOTOGRAPHY has rendered aid, in turn, to nearly all of the sciences, but I wish to note here just three cases which have lately come under my notice where it has been specially serviceable to geology.

In 1858 the question of the antiquity of man was brought prominently before the public by the discovery of flint instruments, clearly fashioned by human hands, in certain gravel beds at St. Acheul, a suburb of the town of Amiens, in the north of France. These gravel-beds were deposited at some former period by the River Somme, but as the river now runs at a level *ninety feet below* these old gravels, it was admitted by all that the gravels were of very great antiquity. Besides the flint tools, these gravels contained many bones of animals, some of *extinct species*, such as the mammoth, cave-bear, etc. The French archæologists, M. Boucher de Perthes and Dr. Rigollot, had already collected hundreds of these flint implements from the gravel-beds when the question of their age was brought before the geological world. The leading men of science, both of England and France, were not at all prepared to accept the evidence afforded by the flint implements without strict investigation, and some of them, indeed, pooh-poohed the thing altogether. They insisted that the flints might have been made by the workmen engaged in the gravel-pits for the sake of the recompense they obtained when they found one (and certainly it was true that all the specimens hitherto discovered had been purchased from the men or picked up on the floor of the pits). Others, more generous, believed in the authenticity of the specimens, but suggested they had been dropped down to the depth in the gravel-beds at which they were found either by a settling of the strata or through some crevice in the beds.

It was to settle this most interesting question that Mr. Prestwich (now Professor of Geology at Oxford) visited Amiens in the autumn of 1858. He superintended fresh excavations by the workmen, and shortly had the pleasure of uncovering with his own hands the end of a fine, well-shaped flint hatchet, lying at a depth of seventeen feet from the surface. This was convincing enough for Mr. Prestwich, but he wanted to equally convince others; so, fetching a photographer, several capital negatives were secured showing the tool still embedded in the strata, and showing also, what was equally important, that there were no signs of any vertical rents, breaks or any disturbances whatever in the overlying beds of sand and loam, which, indeed, contained many fresh-water shells, and had evidently never been disturbed since they were deposited, long ages ago, by the River Somme.

The photographs so secured were presented to the Royal Society, with the talented geologist's report, and carried conviction to many minds, so that many other inquirers visited St. Acheul, including Mr. James Wyatt, who, on his return to England, set to work and succeeded in finding precisely similar specimens in the gravels of the Ouse at Bedford.

The enormous period of time for which man has been an inhabitant of this earth is now clearly recognized, and no small share in the obtaining of this speedy recognition is due to Mr. Prestwich's photographs.

The second instance to which I refer was connected with the discovery, by Dr. Rivière, of a skeleton of one of the early men by whom the stone tools were fashioned and used, and who were undoubtedly ignorant of the use of metals. It is singular that the bones of these early races of mankind should be so scarce;

their weapons we find in plenty, but of their bones hardly a trace. It was therefore a grand event when Dr. Rivière came across a complete skeleton of a palæolithic (or early stone-age) man in a cave near Mentone in the south of France, in March, 1872. He had been excavating in a shallow hollow in the rocks, when he found the bones of a human foot, and this encouraged him to completely excavate the cavern, which proved to be of great extent, forty-five feet in length—running north and south, opening towards the south—and of great height. The skeleton lay at a depth of seventeen feet, and twenty-four feet from the entrance; surrounding it and above it were fifty rude flint flakes and scrapers, with many bones of animals, some of extinct species, but no trace of metal, pottery or polished stone. The bones were those of a man five feet nine inches in height; the skull was of a red color, and was covered with a chaplet of perforated shells and teeth of stags. There the skeleton lay, a grand sight for the geologist or the student of prehistoric man. But how to preserve a record of its exact disposition and appearance, a thing especially important, as the manner in which the body was laid out for interment—whether on the back or side, outstretched or with the knees drawn up—is one of the characteristics by which its probable antiquity may be determined. Fortunately the sun shone right down the cave, and it was an easy matter to secure an excellent photograph of the bones before they were disturbed.

Very many cases have occurred of the uncovering of skeletons and other objects in burial grounds, and even of the illustrious dead in our cathedrals, etc., where all trace of the objects faded away in a few minutes after exposure to the air; the bones crumbling to dust with a touch. If the forethought had been taken to have a camera at hand, other pictures might have been secured of great value to the scientist and the historian.

Lastly, I am sure no one will acknowledge more freely the aid which photography can render to geology than that excellent geologist, Dr. Johnston-Lavis, F.G.S., who is employing the camera freely as an aid to his studies of the volcanic phenomena of Vesuvius; studies which have now extended over some considerable time, and which are encouraged and aided by the British Association.

All volcanic regions are subject to rapid changes of form and level, and a record of such change is of the highest importance in the study of volcanology. The cone of Vesuvius, we know, has undergone most wonderful changes in the past. The hill called Monte Somma, and the lower elevation of La Pedimentina, are relics of an old cone of far greater dimensions than the existing one; and a series of photographs showing the condition of the volcano at regular and frequent intervals since that mighty eruption in A.D. 79, which overwhelmed Pompeii, would indeed be interesting and important. But if it is not possible to now recall the past, we can at least provide for the future. And this is just what Dr. Lavis is doing, by securing almost daily photographs of the crater, plain, and the interior and exterior of the cone of eruption. These change rapidly, sometimes within an hour or two, and the changes afford an important clue to the nature and action of the important, but as yet somewhat mysterious, forces which are at work beneath Southern Italy. Dr. Lavis's photographs will be reproduced in a journal which is published by the Naples section of the Italian Alpine Club.

In writing these few lines I have merely jotted down the first three instances which occurred to me of the aid which photography has been able to render to one science only, viz., geology. Did time and space permit, books might be written describing the assistance which this young art—not yet half a century old—has rendered in all branches of science and art. And yet nine out of ten people still think of photography as simply a mechanical method of taking portraits. Let it be the task of photographers—and more especially of amateurs—to show of what infinite applications, and those of the highest and most accurate nature, photography is capable.

[*From La Nature.*]

METHOD OF USING GELATINO-BROMIDE PLATES IN PHOTOGRAPHY WHICH HAVE ALREADY BEEN EXPOSED.

HERE is a method of using gelatino-bromide plates again after having been already exposed to light. The process was published in 1882 by *La Revue des Sciences et de l'Industrie*, and more latterly by the *Moniteur de la Photographie*.

When operating, perhaps far away from the laboratory, it is often prudent to expose several plates to the same subject in order to insure success, although the first impression might have been sufficient, the result being found perfect at the time of development.

In such a case it is not needful to develop the other plates of the same subject, and they can be kept for making new impressions.

All the exposed plates which are not developed lose the effect of the impression, and become again sensitive by means of a bath of two per cent. of bichromate of potassium. After a good washing, the plates are stood up nearly vertically, one side resting on blotting paper to dry them, of course without any light.

By this process plates which were supposed to be spoiled during the course of an excursion may be used. On returning, if the first or second proof succeed, the other exposed plates can be put aside to be treated, as we have said, and to be again used.

Bibliography.

PHOTOGRAPHIC PRINTING METHODS. By W. H. Burbank. New York: Scovill Company.

This is a handsome large octavo volume of about 220 pages, filled with formulas and the methods of using a number of positive printing processes. The work appears to us to be well done, the methods being collected from a long list of English, French and German sources, and with a judgment that speaks well for the ability of the compiler. The handsome paper and printing of the volume is a credit to the publishers, and the complete index makes the volume very useful for reference.

L'ECLAIRAGE DES PORTRAITS PHOTOGAPHIQUES. Par C. Klary. Paris: Gauthier-Villars. 1887.

This is one of those admirable little manuals published by the well-known house of Gauthier-Villars, and, like all their works, is a model of good typography, neat illustrations, and good paper. It is a small octavo of 64 pages, and treats of the lighting of the model in the studio, and under other circumstances, in order to obtain the best results. There are eight chapters. 1. General considerations. 2. Lighting the subject in the studio. 3. The head screen and the concave reflector. 4. Lighting the subject with a movable and colored head screen. 5. Mechanical applications for regulating the head screen in the studio. 6. Rembrandt effects and the semicircular background. 7. The eyes. And finally 8. Some counsels and truths.

The volume is very practical, well illustrated, and for those of our readers who understand the French language will prove of great assistance. The fact that the volume has passed through six editions speaks more than any words of ours as to its practical value.

TRAITE PRATIQUE DE PHOTOGRAPHIE DECORATIVE. Par V. Roux. Paris: Gauthier-Villars. 1887.

In 46 small octavo pages the author treats of the application of photography to various decorative arts. The use of photography in decorating ceramics is very fully discussed, and a large number of formulas are given, both for wet and dry plate work and also for a number of fluxes of various colors for making enamels. There is also a chapter on photogravure, or photo-etching as applied to the decoration of metals and various stones, glass and gems; but this is hardly more than suggestive. Nevertheless the little volume is an admirably useful one for those who understand the French language.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—H. S. A. writes: I send you some prints handed to me by an amateur, who says they were silvered on a fresh 50-grain bath, just alkaline with ammonia; dried and fumed as usual; placed first in acetic acid bath, about one ounce to a gallon of water; washed in three waters; toned in fresh gold solution, just alkaline with carbonate of soda, and fixed. The yellow appearance was first seen in the waters between the toning and fixing. The paper all had the same treatment, but part came out clear like the one sent having a picture of a rock, and the rest were stained. Can you tell what the trouble is?

A.—The trouble with the stained prints appears to us to be due to sulphur in some form or other, probably sulphureted hydrogen from illuminating or sewer gas.

Q.—D. H. A. incloses three prints and writes: I send three prints with questions on the backs. One more outside of these, and that is, I use Seed plates and the soda developer and my negatives are too black; they are as black as jet and seem harsh, and every pore of the skin looks like pin-holes almost. If I make a soft negative I get a weak print. If you will examine the prints and give me some light on the whole matter, you will confer a favor on a subscriber and friend.

A.—From our experience with rapid plates we should say that you are using too strong a developer; that is it contains too much pyro in it. Print No. 1 is a very good one, but the face wants retouching; its harshness could be softened by weaker development, or by a softer lighting of the subject. No. 2 is quite a good print and should be printed in the shade or with several thicknesses of tissue paper over the printing frame. No. 3 wants retouching very much and a better result would have been obtained if the high lights had been softened with a screen. In general your high lights are too strong; soften them and you will get softer pictures.

Q.—G. S. writes: Will you please inform me, through the columns of the Bulletin, of some process for sizing silks and satins before printing on them, so that desirable results can be obtained.

A.—Size the fabric with a solution of gelatine, two grains to the ounce of water, and when dry salt it with a solution of ammonium chloride, two grains to the ounce of water.

Q.—W. M. B. writes: You will confer a favor on a regular subscriber to the Bulletin by stating briefly in the next number how to sensitize plain unsalted paper. Also tell if it can be floated on the ordinary 40-grain bath without injuring the bath for albumen paper? When the paper has been sensitized, will it keep, or must it be used at once?

A.—You cannot sensitize unsalted paper and obtain satisfactory prints. If salted Saxe paper is used it may be floated. If the salted paper has been prepared with gelatine it will not hurt the silver bath to sensitize a few sheets, but many will add gelatine to the bath and it will require solarizing. Sensitized plain paper does not keep well.

Views Caught with the Drop Shutter.

Buchanan, Bromley & Co. have just issued a very neat little memorandum book which they kindly send us. It has a most unique cover, on which are a number of bees of various sizes *en relievo*, B. B. & Co. being the idea. Inside we find a calendar and a price list of their platinotypes, together with a large number of blank pages for memoranda, etc. The whole affair reflects the good taste of these well-known Philadelphia merchants.

J. C. Newcomb, of Chicago, sends us a very handsome catalogue of ornamental picture-frames in gold, bronze, etc. The designs are decidedly rich and in good artistic taste.

Dr. H. Valentine Knaggs, of London, recently gave us a call and we had a very pleasant time with him. He will be remembered as a contributor to the English photographic journals, and we have had the good fortune to secure a paper from his pen, which will appear in the Bulletin.

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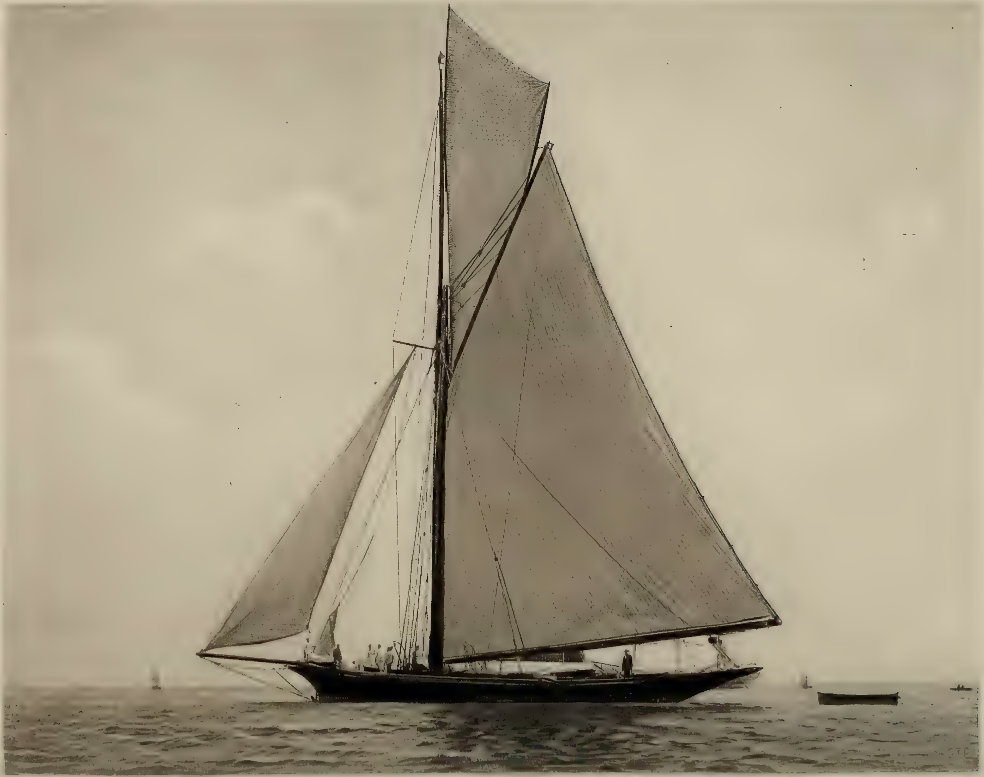
Evening Post Job Print, N. Y.



THE GEBBIE & HUSSON, PHOTOGRAVURE CO. LIMTD PHILADA.

THE THISTLE.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

OCTOBER 22, 1887. Vol. XVIII.—No. 20.

A NEW ERA IN INSTANTANEOUS PHOTOGRAPHY.

From time to time we have heard of various contrivances and inventions whose object it was to secure photographic negatives without sunlight. The electric light, oxy-hydrogen lime light, magnesium wire, and, since the invention of orthochromatic plates, even the light of kerosene, have been suggested and successfully used for this purpose. But in all these cases there has always been some difficulty that made the process inconvenient or wanting in practical application. With the electric light the result was always a hard negative; the source of light being a small point, the shadows are very intense and the high lights ghastly, while the outlines of the pictures are hard and sharp unless some special precaution is taken to either move the light or move the subject, both methods having been used for this purpose with considerable success. In the case of the oxy-hydrogen lime light we have a similar difficulty in the matter of the small size of the source of light, although not nearly so much as in the case of the electric light. But even in this latter case there is a tendency to hardness which is disagreeable. A still more important drawback to the lime light is its lack of chemically effective light rays. Although intensely white to the eye, and at night, it is really a very yellow light when compared to daylight or that from electricity, as can be readily seen by projecting both the electric light and that from lime upon the same white screen; in other words, it is poor in those blue and violet rays which are necessary for chemical decompositions upon silver salts.

In the case of magnesium wire we have a better state of affairs in regard to the chemically active light rays; but the small size of the source of light produces the same hardness in the photographic picture that we have mentioned above. In the matter of convenience this metal magnesium has hitherto been the most useful source of light for taking photographic negatives in places where sunlight could not be used, as for example in subterranean caverns, engineering works, underground mines and such places. But in spite of all that could be done to facilitate the use of magnesium, and of a great reduction in price, this metal was never popular for photographic work.

The greatest drawback to all these sources of illumination is the time consumed in getting good negatives. Until quite recently it was a question of many seconds' exposure to obtain a picture at night; but since the invention of the magnesium mixture of Messrs. Gädicke and Miethe, which has been so well

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described by our esteemed correspondent Dr. H. W. Vogel, in his letters from Germany, we are now able to take photographic negatives instantaneously at night, a feat that but a few months ago would have been thought impossible. Quite a number of our readers, who are progressive and like to keep well abreast of the times, have written us about this magnesium mixture, and we have been forced to confess that it was by no means a desirable material to have around. As we have already stated in many places in the BULLETIN, the Gädicke and Miethe mixture is dangerous, and is peculiarly so from the fact that it contains chlorate of potassium, which, when mixed with any organic or combustible material, makes what is known as a percussion powder; that is, it is readily exploded by friction or a blow.

To overcome this difficulty of the extreme danger of the powder from friction or percussion, we have always advocated keeping the various ingredients ready for use in powder and in separate vessels, only mixing them at the time of need and in quantities only just sufficient for use. But another difficulty arises, and that is the character of the vapors or fumes from the Gädicke and Miethe mixture. As our readers will probably remember, in addition to the magnesium powder and potassium chlorate, the mixture also contains antimony sulphide for the purpose of making it readily ignitable. This antimony sulphide when burnt gives off sulphurous gases and also fumes of antimony oxide, which latter are poisonous. It is therefore very necessary to have provision made for excellent ventilation if this material is used. It has been suggested by one of our correspondents that powdered sugar could be substituted for the antimony sulphide, but here we obtain a dark smoke which might interfere with the production of the picture. We have not yet tried this latter suggestion thoroughly, but think it may be a very good one if the question of proportion of sugar be carefully worked out.

But the neatest and decidedly the best adaptation of magnesium to photographic work at night, was lately exhibited before the Society of Amateur Photographers of New York, by Dr. H. G. Piffard, a gentleman well known in scientific circles for his applications of science to useful ends. Dr. Piffard first used common gunpowder mixed with the magnesium powder and fired in the open air; but being a sportsman and fond of fire-arms, he afterwards concluded that it would be much more practicable to use the mixture in a gun- or pistol-barrel. This gunpowder mixture proved a great success. It was readily obtained, easily mixed and used, and the ingredients were articles of commerce in all large cities. But the doctor did not stop at his first success, and he very soon went a step further and used another explosive to fire his magnesium powder, this time something peculiarly fitted by association and use for photographic purposes, we mean gun-cotton. By using this explosive dusted over with the magnesium powder the most perfect results are obtainable. The explosion is instantaneous; there are no poisonous fumes; and the negatives obtained are not distinguishable from those taken by daylight. There are no hard shadows, because the source of light is not a point, but a flood of illumination which is diffused over the whole subject. The proportion of gun-cotton to magnesium powder is about one of the former to two of the latter. The negatives taken the other evening were obtained by using fifteen grains of magnesium and seven grains of gun-cotton.

Such is a brief statement of one of the latest achievements in photographic science. The results that may develop from this are manifold. In addition to the use of this invention for taking pictures at night, it would prove desirable on dark days, and can also be used to make bromide enlargements at night and instantaneously. Lantern slides can also be made in like manner by its application.

Altogether we believe this ingenious invention of Dr. Piffard's adds another laurel to his fame and marks an era in photographic progress.

EDITORIAL NOTES.

PHOTOGRAPHY has recently been applied to the detection of counterfeits in notes in France. M. Gobert, of the Banque de France, recently had a check handed to him which had been presented at a Parisian bank, and to all appearances was perfectly genuine. It was for 1,106 francs and in favor of a M. Rocher. The signature was genuine beyond a doubt, but the manager of the bank was in doubt about its being all right, and M. Gobert made a photographic enlargement of it. It was now easily seen that the original check was drawn to a M. Suller, and 110 francs were the original figures, the latter being plainly seen under the new writing.

FROM the *Bulletin de l'Assoc. Belge de Photographie* we take the following method of coloring glass for dark room windows. After a number of experiments M. Scola uses this mixture: Water, 100 c.c.; gelatine, 5 grams; silver nitrate, 1 gram. Glass coated with this mixture takes a reddish-brown tint after having been exposed to light for some time. A thorough washing is needed to eliminate all traces of silver nitrate, when a surface is obtained which no longer allows the passage of the actinic light rays. The color is more intense if three or four grams of silver nitrate are used instead of one as in the above mixture. It may also be used for dark room lanterns.

MR. PLOMER, before the Photographic Association of London, called the attention of the members to a landscape photograph containing a picture of a rainbow. It appears on the proof as if the arch was solid, an arch of wood for example. This appears to be the first time on record that a rainbow has been caught by photography.

WE note in the current number of the *Scientific American* an excellent article on the Harvard Observatory and the Henry Draper Memorial. The description is very good and the illustrations highly interesting, especially those relating to the applications of photography used by Professor Pickering. We gave a brief review of the good work being done by the Professor some time ago, and those of our readers who are interested in this line of photographic research should see the article that we refer to.

WE have had a number of inquiries about magnesium powder for the new instantaneous photography at night, and we are glad to inform our readers that they can obtain it by mail or otherwise from our publishers. In regard to the gun-cotton to be used in Dr. Piffard's method, we must remind our readers that the material cannot be sent through the mails, because it is an explosive. It can easily be procured of local dealers outside of New York, and in this city of our publishers. This new method is a very decided success and should be tried by all who care to keep up to the times in matters photographic.

THE question of the advisability of having monthly photographic receptions at the Photographic Section of the American Institute was discussed at an informal social meeting held on October 19th. We think the idea is a good one, but it means that several of the members shall take it upon themselves that objects of interest shall be provided for the entertainment of the others, a task by no means an easy one. Nevertheless we believe there are enough earnest men in the section to carry it through, and we wish them every success.

WE give on another page a short account of the exhibition of the Amateur Photographic Association of Victoria, Australia. We are indebted to our esteemed correspondent Mr. J. W. Harvey, the Honorary Secretary, for his kindness in forwarding the report. The society seems in a very flourishing condition, and we wish it continued success.

MR. G. M. CARLISLE, the honored Treasurer of the Photographers' Association of America, is now located in Kansas City, which he says "is the brightest little spot on the face of the earth." We heartily wish him every success in his new home, and that the years may be lengthened out in which he can enjoy it.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Russian Solar Eclipse.

WILL you kindly excuse me if I failed to send you my reports during the last seven weeks. I was engaged in a rather extraordinary enterprise, a trip to Russia for the observation of the solar eclipse on August 19th.

Three times already I have traveled across land and sea with solar eclipse expeditions, the first time twenty years ago; and on this occasion also I could not resist the temptation, and joined Professor Niesten, of Belgium, to observe in company with him the curious phenomenon at Jurgewetz on the Volga. You will have learned in the meantime that many observers, Russian, American, English and German astronomers, were distributed along the whole eclipse line, extending from Germany to Russia and Siberia, and that the unfavorable weather frustrated almost all observations. Still there were a few more fortunate among the large number of disappointed ones, and with the former may be counted the station of Jurgewetz. Far from having a cloudless sky, we were enabled to observe and photograph the phenomenon. To be sure we did not succeed in taking the spectrum, it being too weak and overshadowed by clouds, but we have at least obtained a general picture of the phenomenon. A large number of observers, the astronomers Belopolski and Sternberg from Moscow; Tscherbakoff and the well-known photographer Karelin, from Nischni Novgorod; and several amateurs, came to Jurgewetz. I think it is in the interest of future expeditions, to which the United States with their solar eclipse of January 1, 1889, may give the first opportunity, that I speak about our equipments.

Belopolski and Niesten intended to take photographic views of the shape of the corona. Both used for this purpose a camera with four lenses, admitting the taking of four pictures at the same time. Niesten had two Dallmeyer, one Ross and one Darlot lens; Belopolski, one Voigtländer portrait, one Voigtlander Euryscope, one Busch, and one Dallmeyer portrait lens. Niesten exposed with flap shutters, which he could open pneumatically and separately for each lens Belopolski applied a cover, opening or closing all lenses at the same time. The former arrangement admitted of a wider limit. With this four pictures could be made simultaneously or with different exposures. It was Niesten's intention to vary from 5 to 30 seconds.

The plates of short exposure were to secure the lighter parts of the corona (being easily lost by over-exposure), the plates of longer exposure were to give the weaker parts. To take full advantage of the totality, Niesten, as well as Belopolski, had several holders filled with plates and ready for exchange. The changing of holders occupied about ten seconds. Size of plate was 13 x 18 cm. The solar picture showing only little more than 3 mm., a much smaller size of plate could have been used. Probably it might have been of advantage to take sliding holders, admitting the taking of several pictures on one plate in succession, without the necessity of changing. The cameras of both observers were adjusted upon the telescopic axis, but Niesten's tube was not mounted parallactically, so that he was obliged to turn it by hand, while looking through the finder, to follow the movement of the celestial body. Besides this, he had on his telescope an enlarging system, admitting of taking the pictures enlarged three times. This was to serve for taking the protuberances. Belopolski tried to use at the same time my small spectrograph, for taking the spectrum, by placing it upon his telescope, adjusting in front of it a condensing lens. He used eosine silver plates. Mr. Karelin was equipped with a landscape apparatus as well as a large camera with an excellent Ross portrait lens of 6 inches diameter, which surpassed, in regard to strength of light, all our other objectives.

The prospects about the weather for the eclipse day were as bad as they possibly could be. The barometer was seldom higher than 750 mm.; the wind blew constantly from the west or southwest; and the sky was covered almost every morning, giving us only a few glimpses of the sun for the necessary focusing of our instruments. On the day of observation two layers of clouds appeared, an upper thinner one, and a lower one consisting of heavier clouds, moving toward the north. The sun was visible at intervals, when by a movement of the clouds the thinner ones passed over it; its light was so much weakened by the passing clouds that the use of a black glass was not necessary.

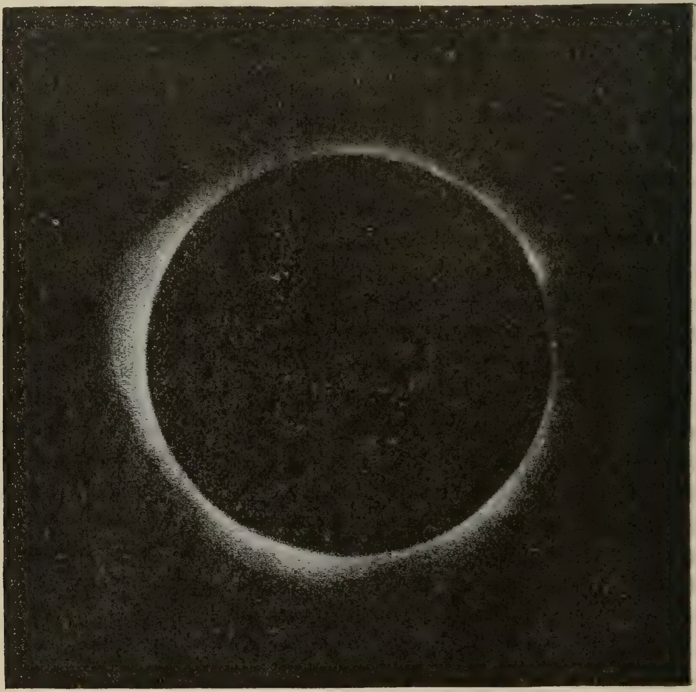
Some instantaneous views were taken before totality. The latter began at 7 hours 10 minutes 44.52 seconds A.M., local time, and ended at 7 hours 13 minutes 11.64 seconds. The sun's altitude at the time was almost 20 degrees. At the beginning of totality it appeared somewhat clearer, but darkened again towards the end of the first minute, so that the photographic views were to a great extent limited to this time. With regard to the atmospheric cloudiness, the time of exposure lasted rather long, and was extended in one case to thirty seconds. For the same reason we abandoned the idea of comparative views with color-sensitive and ordinary plates. The plates intended for a view of the spectrum, I exposed during the duration of totality, two seconds, from beginning to end. Some of the plates were developed in Jurgewetz, among them the spectrum plate, but without success. The other plates we took with us to Nischni Novgorod, to develop them in the laboratory of Mr. Karelin, who in the kindest manner gave us his support. The longer exposed plates gave better results, particularly after applying a preliminary bath, upon the advice of Mr. Karelin, which seemed to be particularly suited for the development of weakly exposed plates.

This bath has been known for some time, but as yet has found little employment. It consists of

Bichloride of mercury solution (1 to 200)	5 drops.
Concentrated hypo solution	1 drop.
Water	150 c.cm.

The plate is immersed for thirty seconds, washed well, and then developed with oxalate of iron.

Several of the plates do not appear very sharp, the movement of the tube by hand being not certain enough; but two are sufficiently sharp to give a good picture of the phenomenon. Three protuberances in the northwesterly solar quadrant can be easily recognized, as also the whole chromosphere. But of the corona, our principal object, only a part appeared, the lower side. They show best developed at the southerly and east southerly polar circle. Before termination of the first minute of totality we saw the corona in its full width, surpassing that of the sun, stand forth in a southeasterly direction for a short time, but none of the photographs obtained show anything of this appearance. Its strength of light was weakened too much by clouds.



Solar Eclipse at Jurgewetz, August 19, 1887.
Karelin's photograph enlarged.
Four protuberances are seen in upper right quadrant.

The photographer Karelin, on the other hand, succeeded with his drop objective in obtaining an excellent instantaneous picture during totality, which, developed in the same manner as above described, proved to be very good and in conformity with the previously mentioned pictures. The shutter, a so-called instantaneous spring-drop one, admitted an exposure of $\frac{1}{50}$ to $\frac{1}{60}$ of a second, and the picture shows that at the moment of exposure, thanks to an opening in the clouds, the light must have been considerably strong; but that, by application of a very diaphanous objective under favorable condition of the weather and extremely short exposure, an efficient picture can also be obtained of the phenomenon without parallactic mounting and heliostat. Karelin's plate might be the first instantaneous view taken during totality.

Mr. Karelin, Jr., attempted at the same time to take a landscape during totality. He exposed for this purpose 2 minutes 23 seconds with a Voigtländer Euryscope, 50 mm. opening, and 32 mm. central stop, with Bernaert's plate, and obtained a partly detailed picture of a brick building. The picture proves that a much greater illumination exists during totality than it has the appearance of. This of course is not caused solely by the protuberances and corona, but by parts of the atmosphere around the dark zone still affected by the sun's rays, and which reflect light into the dark district. This illuminated atmosphere is distinctly recognized on the horizon during totality. A similar picture under a still more cloudy sky was obtained by Mr. Lewitzky, Jr. (St. Petersburg), in Twer.

The Jurgewetz observations have therefore not remained without result, even if the shape of the corona was photographed incomplete, and the spectrum not at all.

Besides ourselves, Professor Kowalsky, from St. Petersburg, obtained photographs of the phenomenon in Petrovsk, and under similar unfavorable conditions of the weather. He used for this purpose a parallactically mounted Secretan portrait lens of 6-inch opening and 80 cm. focus, using plates made by Sresnewecki, of St. Petersburg, after Warnerke's process, showing a sensitiveness of 22 degrees Warnerke sensitometer. He obtained two pictures of the corona, with exposures of three and one seconds, the former proving to be the best. I had an opportunity to compare the views with Karelin's plate, and the result was an almost complete conformity, although the time of exposure differed extremely.

The view of the spectrum did not succeed, the light being too weak, but it might be of interest to be acquainted with the very simple apparatus used by me. A telescope with clock movement to follow the course of the sun not being in my possession, I took a heliostat, throwing the light of the sun upon a telescopic lens. This I concentrated upon the slit of my photographic spectrum apparatus, and with the aid of these simple arrangements I could calculate upon a result, the condensing lens increasing the strength of light almost sixty times. With two hours' exposure I took, without such a lens, a weak oxygen spectrum with azaline plates. Two minutes' exposure was therefore sufficient with the condensing lens, and I hoped to obtain a weak spectrum of the corona, provided it had been free from clouds. I recommend this arrangement as being simple, easy, portable, and practical.

A good deal remains to be done yet by future observers of a solar eclipse. The secret of the corona has to be solved. Until the next eclipse (1889) there will be opportunity to determine the value of the color-sensitive plates for several weak spectra; and then, equipped with more color-sensitive plates, provided the weather is good, important results can be obtained.

The observation of the solar eclipse has given one result; that is, the fact that by application of very strongly diaphanous objectives even instantaneous views were sufficient to photograph the light part of the totality phenomenon. For this purpose the expensive and parallactically mounted telescopes may be dispensed with.

STORMS.

By Dr. H. Valentine Knaggs, *London, England.*

Photographs of cloudland, when that evanescent portion of the aerial universe is in an angry mood, are always interesting and well worth the careful attention and study of enterprising amateurs. It is principally amongst the elevated and mountainous regions of the earth that storm clouds mostly gather, and that the ideal storm is seen in all its grandeur, and to the best advantage. Exposures of this kind however are often attended with much discomfort, to say nothing of the danger of getting wet through. Besides, when the rain does make its appearance in that alarming, and certainly not too polite kind of manner inseparable to tempestuous weather, we may run the risk of spoiling or damaging our apparatus.

Many opportunities of engaging in the interesting study of storm effects have presented themselves to me during my rambles in search of the picturesque, and I will endeavor to recapitulate briefly the few points that I have gathered in connection with this subject. I have come to regard the mountain with its sense of unspeakable stillness and desolation as an essential adjunct of the cloud picture, and I consider Switzerland to be the *beau ideal* of a happy hunting ground for such negatives.

Switzerland presents this great advantage, that almost at every high elevation to which an ascent can conveniently be made, you are pretty certain to find a comfortable hotel or inn, from the convenient shelter of which you can wait your time, and on the threatened appearance of a storm, either make use of the windows commanding a view of the surrounding scenery, or make a short excursion to a suitable location within easy access of the building, in order to take the view to the best advantage.

The best storm clouds are usually observed when a high wind is blowing, for a tendency to a temporary break up and to the formation of separate masses is then to a great extent assured. The rain also will in all probability make its appearance only at intervals, enabling us during one of the spells of quiet to secure the negative. The presence of electrical disturbances in the atmosphere I also regard as favorable to the presence of suitable clouds, and, as a consequence, to good results.

One of my happiest efforts was secured under conditions as stated above. I happened to be stopping at a little inn at a place called Mattmark, situated in Switzerland amongst the high Alps, when a terrific storm of wind and rain came upon us. In the evening, about seven o'clock, during a temporary lull the window facing the mountains was opened (not without some difficulty on account of the wind), the camera was directed towards the clouds, and an exposure with the smallest stop of my lens, of five seconds, yielded a magnificent picture.

Generally speaking storm clouds require a longer exposure than ordinary clouds on account of the feeble character of the light. The development also should be as slow as possible, and the solutions well diluted and weak, in order to keep down the density and obtain as much detail of the surrounding country as possible.

In conclusion I would advise all amateurs, when their annual outing leads them into mountainous districts, not to miss the chance of bringing back with them a storm negative should the opportunity present itself.

[*From our Special Correspondent.*]

EXHIBITION OF THE AMATEUR PHOTOGRAPHIC ASSOCIATION OF VICTORIA.

The fourth annual exhibition of this association was opened on July 19th, at the Royal Society's Hall, Melbourne. The display of work produced by members during the past year was large and, generally speaking, excellent in quality, a great improvement upon the previous exhibition being apparent on all sides.

Several of the members devote themselves wholly to stereoscopic work, whilst many others introduced it occasionally as a variation. Stereoscopic transparencies, also silver and carbon prints, were well represented in consequence, and the tables on which the stereoscopes were mounted were centers of attraction. Messrs. Musgrove, Bell, Walker and Harvey were the chief exhibitors in this class.

Another feature of the exhibition was the large quantity of architectural work shown. Messrs. Kernot and Mulvany showed churches, private residences and commercial structures, a view of the interior of St. Patrick's Cathedral by the latter gentleman being exceedingly good. Mr. Harvey showed suburban and provincial town halls and blocks of government buildings, also a fine set of interiors of the Melbourne Houses of Parliament.

In landscape enlargements the only exhibitor was Mr. Musgrove, who showed carbon prints about 15 x 12, enlarged from stereoscopic negatives produced on plates of his own make.

A large number of landscape and marine views were shown, the principal exhibitors being Messrs. Walker, Lang, Harvie, Cooke, Atkin, Harper, Fullerton and Jones, whilst many others were content with sending smaller exhibits.

Miss Cooper, who is at present the only lady member of the association, sent a frame containing several picturesque bits in the local Zoo.

The only exhibitor in platinotype was Mr. Lang. This process has not made much headway in the colony, no doubt owing to the difficulty (until lately) of obtaining the necessary materials.

The Philadelphia Amateur Photographic Club was well represented by a number of finely executed prints. Many of these were of great beauty, and in consequence of being the first American amateur productions which had been seen by many present, created no little interest.

The Queensland Photographic Society sent a large assortment of prints and a number of lantern slides.

Messrs. G. West & Sons, England, sent a set of their celebrated yacht studies.

Messrs. Swift & Sons, London, presented to the society a set of admirable photos, illustrating work done by lenses of their manufacture, which were accorded a place on the walls.

In an adjoining room the optical lanterns of the association were used to project the lantern slides, of which there were shows at intervals on each evening.

The photographic material dealers of the city sent a varied assortment of novelties, and the exhibition was the most satisfactory yet held by the association.

HOW TO ATTACH A CAMERA TO THE TRIPOD.

By Coleman Sellers, M. Inst. C.E., *Professor of Mechanics, Franklin Institute, Philadelphia.*

A great many devices have been presented for fastening the tripod to the base of a camera, but most instruments come to us furnished with a binding-screw and a nut or plate to receive this screw on the under side of the camera. It is far from agreeable to have to peep under the camera and hunt for the screw.

This summer I have luxuriated in the possession of a 6½ x 8½ Novelette camera. The binding-screw to attach it to the tripod was found screwed into a holder below the lens frame. It is a capital idea to have a place to keep this screw when not in use. I find that the Fairy tripod is quite heavy and steady enough to carry a whole size Novelette, and the thin round top board of this tripod gave me an idea in the matter of attachment that may be new to some of your readers. I screwed this top board in place below the camera, and then inserted two pins, 4½ inches apart, just touching the periphery of the top board. The pins were, in point of fact, two small screws, the heads being nipped off after insertion. These pins were for the purpose of centering the binding-screw. I set up the tripod, place the camera on its top, and push the two pins up to the edge of the top board, when the hole in the tripod top and the screw-hole under the camera are directly one over the other, and the screw can be put in with one's eyes shut. So much for this new light round board for the tripod head.

Using with this camera both plate holders and an Eastman roll holder, the makers have provided me with two ground glass frames for focusing, the deeper one being for the roll holder. To avoid carrying both afield, I attach a sliding block to one side of the base frame. The block is held in place by bits of wire sliding in the side grooves of the frame. The block is notched, and marked from the notch a distance equal to the difference in the two focusing frames. Using the thin focusing frame if I desire to use the Eastman holder, I shove the block up to the back of the camera after focusing, and then rack forward to the mark on the block, when the camera will be shortened just enough to bring the paper film into true position for a sharp image.

The morocco case that contains the stops of the rapid rectilinear lens I have screwed fast to the camera frame, where it cannot be in the way and is always ready for use, not left at home or lost. The wide angle lens, which is placed in the carrying case, is provided with rotary steps. The rapid rectilinear when not in use is reversed, back lens out, screwed into the camera, and so packed.

These may all be well known dodges, but if so they may be worth telling again to others who, like me, have not read all that has been published during the last twenty-five or thirty years on the subject.

THE MINNEAPOLIS CONVENTION IN QUESTION.

To the Editors of the Bulletin.

As many members of the P. A. of A. have expressed doubts as to Minneapolis being central enough for the next convention, the question arises: Have the Executive Committee authority to change the location if considered best for the good of the association? An expression of opinion from the members would certainly greatly influence the committee.

D.

PHOTOGRAPHIC WASTES AND HOW TO SAVE THEM.

By John Young, *Chicago, Ill.*

Paper Clippings, all Untoned or Over-exposed Prints, Blotters, Filters, etc.—These should be introduced by degrees into an ordinary stove and burned to ashes in the most thorough manner. It is important that the ashes be not withdrawn from the stove until the whole of the carbonaceous portion of the paper is entirely consumed. The paper should be kept free from admixture with tin-type clippings, glass, nails, and other extraneous matter, which is a positive injury to the waste. Before burning see that the draft is completely shut off, otherwise much loss of silver will be occasioned.

Print Washings and Old Positive and Negative Baths.—To save the above wastes in the easiest and most economical manner, procure a good sound cask of dimensions suitable to your needs; loosen the top hoops in order to remove the head, and replace hoops tightly. Next have a hole bored through the side of the cask about seven or eight inches from the bottom; into this insert a wooden faucet and the barrel is ready to receive the waste solutions referred to. To precipitate the silver from these, proceed as follows: Make a saturated solution of common salt and add to the liquid in the barrel; the precipitate which forms is chloride of silver. An ounce of common sulphuric acid, added occasionally, acts beneficially, keeping the solution in an acid condition. Should the liquid after standing 24 hours refuse to clear up, a wine-glassful of a saturated solution of common alum or protosulphate of iron will bring about the desired result. When the precipitate has subsided, the waste water can be drawn off by the faucet and thrown away.

Fixing Solutions from Prints and Dry Plates, and Cyanide Solutions from Tin-types.—These should be introduced into a barrel similar in every respect to that already referred to. Instead of salt however, the savory compound known as sulphuret of potassium must be dissolved and added so long as it forms a precipitate. The latter is of a very dark color, and in this case is termed sulphide of silver. Should this solution also refuse to clear up after standing 24 hours, add solution of protosulphate of iron or alum as already suggested. In these, and indeed all waste solutions, large stoneware crocks may be advantageously substituted for barrels, should the volume of waste not be too large.

Wet Plate Developer Washings.—These may be introduced into a large stoneware crock and allowed to stand untouched for 24 hours or so. No reagent for precipitating the silver need be added, as the protosulphate of iron necessarily present accomplishes this in the most thorough manner, more especially if an ounce of common sulphuric acid be added. The latter prevents the formation of a useless deposit of iron along with the silver, and the refining, as a natural sequence, is rendered less difficult. A few drops of any light oil sprinkled on the surface likewise retards oxidation.

Gelatine Emulsions.—To recover the bromide and iodide of silver which is present in the above waste, introduce the emulsions into a large stoneware crock to a height of one-third; a quantity of common sulphuric acid (say one or two quarts) must now be added. This in a few hours will result in the degelatinization of the gelatine, the latter losing its setting qualities. A large amount of boiling water must now be added so as to make the solution as attenuated as possible. The silver will, by reason of its superior specific gravity, gradually subside, forming a pale yellow deposit at the bottom of the vessel. Allow the crock to stand several days, and then decant off the supernatant liquor and throw it away. Dry the prcipitate spontaneously, or by filtration through very fine bleached muslin, and it will be ready for treatment by the refiner.

Gold Solutions.—Old spent toning baths sometimes contain a small amount of gold. To recover this proceed as follows: Pour all the solutions into a stoneware crock; add an ounce or two of common sulphuric acid, and then a strong solution of freshly dissolved protosulphate of iron. The precipitate will soon subside and in time form a brownish-black deposit at the bottom of the vessel. The deposits also which invariably form while the toning bath is being neutralized by carbonate of soda or other alkali should be saved and thrown into the crock.

If absolutely necessary, the wet plate developer waste may be thrown into the barrel containing the print washings, but it is best kept separate.

Should space be limited, the print washing and fixing solutions, etc., may be kept in the same barrel, and sulphuret of potassium only used to precipitate the silver. I do not recommend this however if it can be avoided.

A piece of very fine bleached muslin makes a good filter for all the wastes alluded to. An old felt hat or chamois leather skin are also very good, but act slowly.

DEVELOPERS FOR INSTANTANEOUS EXPOSURES.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York.

Does Heat and Moisture Affect the Sensitiveness and Keeping Qualities of Plates?

My experience in the development of instantaneously exposed plates has been somewhat limited, but such knowledge as I have gained from observation and experiment has led me to believe that for objects on land and others of a dark nature, such as buildings, street scenes, etc., in order to secure an image that can be readily and satisfactorily developed, it is advisable to use the lens at its full aperture, having the shutter work at tolerably fast speed.

Exceptions to this mode of procedure are to be noted in climates and countries where the sun is of extraordinary brilliancy, such as South America, India, Japan, etc., where a stop as small as *f*–16 and *f*–32 may be used with safety.

In taking pictures of marine objects I have generally used a stop as small as *f*–16, but have known of instances where a stop *f*–32 was required in order to prevent over-exposure. Hence I do not advise the use of too small a stop, but rather recommend a large stop and a quick-acting shutter.

A few weeks ago I received a communication from one of our members bearing on this subject, which will doubtless be instructive to some of us. He says:

"I was recently in West Virginia and Western Maryland, and took with me my little detective camera and a lot of last year's Seed's plates, which had always given me good results. The plates were part of a batch specially made for me in April, 1886, No. 869. They were evidently flowed on whole plates 6½ x 8½ and then cut down to 3¼ x 4¼.

"They worked splendidly during that summer until October or November, when they began to show a drying fog along two edges, and a slight transparent deterioration along the edge touched by the paste-bóard mat frames.

"On developing my exposures, at the conclusion of my trip, I found to my chagrin that the plates had deteriorated in the prolonged hot weather, and do what I would they came out thin and slow with little 'snap.'

"The whole surface seems to have been affected, and the appearance was so peculiar as to lead me to conclude that it must be due to the excessive humidity of the atmosphere of the late prolonged hot spell. I have observed it in nearly all brands of plates. It was so damp at my summer residence that a box of cigarettes left on the shelf for two weeks became fairly soggy. Some fine fresh Seed and Ripley plates kept in the same house a few weeks during this humid period utterly refused to respond to instantaneous shots.

"In my city residence I had similar plates stored in an upper story where it was hot and dry, but they also had deteriorated. A lot of last year's Carbutt No. 25 were ruined. Strange to say, a box of Cramer's, nearly three years old, withstood the trial admirably, as the inclosed print shows. But I can do nothing with this year's Cramer No. 25, and I fancy he has altered his sensitometer numbers, and that his new No. 40 is about the same as his old No. 25. [A blue print from the negative on the three-year old plate was then passed around.]

"Last June I had a singular experience with a lot of plates specially prepared for me. They turned out to be a sad disappointment. The gelatine was so soft that it simply dissolved off in the developer in spite of ice. There was no frilling, it simply soaked off, so that half an inch around the margin became clear glass.

"When I had finished the development of nearly all of the plates exposed on my trip, I reserved six for development in the following experimental solution:*

Ferrocyanide of potassium (yellow)	1½	ounces	avoirdupois.
Carbonate of potassium, c. p.	1½	"	"
Carbonate sodium, c. p. (dry)	1	"	"
Sulphite sodium crystals, c. p.	2	"	"
Hot distilled water to make	10	"	"

Filter when cold.

I used the above in place of the Beach potash solution. It was very energetic in its action, half as much as the usual amount of potash solution being sufficient to easily develop the plate, while it was advisable also to employ a few drops of a ten per cent. solution of bromide of potassium to restrain.

"With this modification I succeeded in obtaining from the six plates fine 'snappy' negatives, free from the annoying fog that had spread over all the other deteriorated plates, with clear shadows and the high lights of that soft creamy gray that so delights the eye and prints so well in the wet plate process. If potash and soda are alone used the film seems to possess a cold, hard gray color, but the addition of ferrocyanide appears to give it a warmer, creamier gray. The formula, it seems to me, should be further experimented with.

"The addition of some sort of bromide appears to be necessary, and I have thought bromide of cadmium might assist in preserving clearness in the shadows and at the same time effect a better color, more like that of a wet plate, in the film.

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* We have printed this paper as we received the copy; but we doubt the developing power of this mixture.—Eds.

“A developer for a fully timed instantaneous shot in a good light is made up as follows:

Beach’s pyro solution	1 dram.
Ferrocyanide solution	20 drops.
Bromide potassium solution	2 “
Water	3 ounces.

“For an insufficiently timed instantaneous shot, in dim light or with a comparatively thin plate, use

Beach’s pyro solution	1 dram.
Ferrocyanide solution	30 to 40 drops.
Bromide of potassium solution	5 to 6 “
Water	3 ounces.

“For a time exposure on a slower grade of plate I advise increasing the amount of pyro solution by half a dram, and using less of the ferrocyanide.

“If my suggestion should help you to solve the problem of how to get snap and good detail from a very short instantaneous exposure in defective light, or from plates which show an annoying tendency to fog before sufficient printing density can be obtained, I shall be delighted.”

Acting on the above suggestions, I undertook by some recent experiments to test the working of different alkalies when added to the developer, with a view of finding out which, if any, gave the best results on very short time plates. I first cut an 8 x 10 Cramer (30) plate into four quarters in order to be sure of having the same emulsion and the same degree of sensitiveness. I then gave each of the 4 x 5 plates a uniform exposure (about one-third of a second), using a Hoover shutter in a Ross rapid symmetrical lens, *f*–8, on one subject, all within ten minutes, and had a uniform light.

In addition to the regular pyro and potash solutions, I prepared three solutions as follows:

No. 1.

Carbonate of soda (granular)	30 grains.
Water	1 ounce.

No. 2.

Ferrocyanide of potassium	60 grains.
Water	1 ounce.

No. 3.

Bromide of cadmium	10 grains.
Water	1 ounce.

Having on hand the pyro and potash solutions prepared after my formula (the potash solution containing in each ounce 172 grains of potash and 109 grains of sulphite of soda), I proceeded to mix fresh developers for each experiment about as follows:

EXPERIMENT 1.

Beach pyro solution (equivalent to 6 grains)	1 dram.
“ potash “ (“ 21 “)	1 “
Water	14 drams.

Temperature of solution, 67 degrees F. Poured over plate without previously wetting same. Image appeared in ten seconds; development completed in two minutes; temperature, 70 degrees F.; solution very clear and of light orange color.

EXPERIMENT 2.

Same pyro solution	1 dram.
“ potash “ (equivalent to 11 grains)	½ “
Carbonate soda solution (equivalent to 2 grains)	½ “
Water	14 drams.

Temperature of solution, 66 degrees F. Image appeared in ten seconds; development completed in three minutes; temperature, 70 degrees F.; solution very clear.

EXPERIMENT 3.

Pyro solution	1 dram.
Beach potash solution (equivalent to 7 grains)	20 minims.
Carbonate of soda solution (equivalent to 1½ grains)	20 "
Ferrocyanide of potassium solution (equivalent to 3 grains)	20 "
Water	14 drams.

Temperature, 67 degrees F. Image appeared in 15 seconds; development completed in three minutes; temperature, 70 degrees F.; film appeared to keep quite clear; solution was also very clear.

Before trying Experiment No. 4, which was intended to be precisely the same as No. 3, with the exception of the addition of bromide of cadmium, I found by a few test trials the latter chemical formed a precipitate in the presence of carbonate of soda or ferrocyanide of potassium alone, but did not do so in the presence of either pyro or carbonate of potash, hence I was restricted to the following:

EXPERIMENT 4.

Pyro solution	1 dram.
Beach potash solution (equivalent to 21 grains)	1 "
Bromide of cadmium solution (equivalent to 1 grain)	48 minims.
Water	13 drams.

Temperature, 66 degrees F. Image appeared in twenty seconds; development completed in four minutes; temperature, 70 degrees F.; developer, of a straw color on the start, turned quite red, but kept clear. Picture on surface of film kept quite clear during the different stages of development, showing a crispness that did not appear in Experiments 1, 2 and 3.

In each experiment it will be noticed that the temperature of the developer increases three degrees, indicating that the chemical action evolves heat though it may have been absorbed from the surrounding atmosphere, which was 76 degrees F.

In all cases the developer was applied directly to the dry film of the plate, and every precaution was taken to have each experiment made on as uniform a basis as possible. Examining the resulting negatives before a blue sky by transmitted light, one is struck by their similarity in color. Taking No. 1, which corresponds with Experiment 1, we observe that it has what may be called a greenish-brown, gray color. No. 2 developed with pyro and potash and soda has about the same density as No. 1, but a lighter gray and more of a bluish color. No. 3, combining ferrocyanide with the potash and soda, is more dense, and has a clearer gray color than No. 1. No. 4 has a darker gray color than No. 1, but is lighter in the shadows and much more dense. No. 4 took the longest time to print from, but if you will examine the silver print and compare it with prints from the other negatives, you notice that it is much more brilliant. Very likely the additional density in this negative may be due to the extra minute consumed in developing; but, judging from the brilliancy and contrast with which the image came up, I conclude that the bromide of cadmium must have had some good effect, and hence I advise its use and a corresponding decrease in the amount of pyro, otherwise, with slower development, too great density will be obtained.

In comparing the amount of alkali contained in the various developers, with that in the developer suggested by my friend, I find that I have an average of 16 grains to the 2 ounces of developer, while he has an average of 9 grains to 3 ounces, or more than one-half less the strength of mine. The strength of his alkali solution is 65 grains to the ounce.

Eight grains to the ounce of developer then of any of the fixed alkalies may be considered a good maximum strength for the development of an instantaneously exposed plate. If more alkali is added the tendency is to veil the film so much as to prevent the production of a good printing negative.

If these experiments prove anything, they show that if sufficient sulphite of soda is used in the developer, the color of the film varies very little, regardless of the kind of alkali used, while a liberal amount of alkali, tempered with a light bromide, such as cadmium, and added judiciously, produces the best developer for instantaneous exposures.

The question as to whether heat and moisture, or, more commonly speaking, excessive humidity, injuriously affect plates for quick work, is one that I have not sufficient experience on to hazard an opinion. The experience related seems to show that some deleterious effect was produced. If we could collect evidence from several different sources during the same period, we might determine accurately the injurious consequences of humidity. I suggest it as a good field for further experiment. In all of the negatives exhibited you will observe they are uniformly equal in amount of detail, showing that there is no choice to select from as to alkalies. My preference is for the soda and potash, or the potash and bromide of cadmium.

THE STANDARD OF DEVELOPER.

BY ROBERT B. ROOSEVELT.

[Read before the Society of Amateur Photographers of New York.]

NOTHING has stood more in the way of the amateur's acquisition of the best method of photographic manipulation than the confused and the confusing, muddled, misleading, and thoroughly unscientific way in which the formulas for developers have been made up. Whether these are to be found in the boxes of plates sold by the manufacturers, or on the pages of the works nominally intended for the instruction of the beginner, they are almost alike in their useless and senseless intricacy.

I brought the question of the possibility and advisability of our insisting upon a comprehensible and uniform method in the compounding of these formulas before a previous meeting of this society, and having been placed on the Committee on Developers have given further attention to the matter.

A favorite plan of some reformers is the substitution of French for American weights and measures, and incidentally or independently, the use of ten per cent. solutions. These plans, one or both, have been pressed upon us as a correction of the difficulty, but they do not meet the case. We do not want a purely scientific manipulation, and the gram will never be our Moses, nor foreign or unusual terms or scales guide us out of our wilderness. What we need is something for every-day use that the least experienced, equally with the most expert, can understand at a glance, employ with absolute certainty, and remember without difficulty. Talking in centimeters or multiplying by decimals is a useless confusion, and even when thoroughly mastered is only mere addition to the unnecessarily numerous differing tables which already bother the photographic mind. A percentage solution is not only an awkward combination to manage, but is so curiously inaccurate as to be nearly absurd. The percentage that a solid bears to a liquid is as droll as the view of the blind man who said that after much study he had discovered that the color scarlet was very similar to the blast of a trumpet. A 10-grain solution, which is often mistaken for a ten per cent. one, would be entirely proper, but a percentage of hypo, or any other solid, to water is closely allied with the result of multiplying ten oranges by ten pears. Because there happens to be a fluid ounce as well as a solid ounce, it does not follow that there is a proportional relation between the two. Such a proportion if made should be by weight alone and accurately, and not on the old cook's theory, that a pint is necessarily a pound.

But what is needed in practical photography is a preparation which can be easily understood and quickly varied, while the proportions can be distinctly borne in the mind. Its constituent parts must be so separated that it can be strengthened or weakened from the point of view of effect on the latent image. The ordinarily accepted proportions of the materials of a pyrogallic developer are two grains of pyro to one ounce of water, combined with about eight grains of sulphite of soda, the latter being merely to keep the plate clear of stains. Both of these substances are perishable and deteriorate rapidly in water. To these are added about twelve grains of crystallized carbonate of soda or half the amount of potash for a working developer. Pyro has been used undissolved, but it was found that the same thing had to be done with the sulphite or that also would lose its power. The sulphite and the pyro go well together, but need a preservative. Amateurs are apt to keep their developers too long, and the best of preservatives lose their effects after a time. Nothing else is absolutely needed in a developer except occasionally bromide as a restrainer, and this is to be added only by drops. Of the principal ingredients however the proportions have often to be greatly changed, and opinions differ widely as to the nature of this change. For instantaneous pictures some persons double the amount of pyro from the standard formula, while others reduce it, and for under-exposures one man wants a strong and another a weak developer.

Now my suggestion is that we should determine on a certain formula of a fixed strength according to fluid drams. Say we accept two grains of pyro to eight grains of sulphite in each dram of the pyro solution, with enough sulphurous or other acid to preserve it. Then for the accelerator let us determine on say six grains of potash or twelve of soda crystals to the dram. We can then mix our developer intelligently without the study of French grams or the complication of decimals. Say we need a normal compound, we pour out a certain number of drams from each bottle and fill up to an equal number of ounces of water in our graduate, and we know exactly how many grains of each constituent we have. If we desire an increase of either we can get it exactly by half drams or less. Thus the quantity of water and proportion of ingredients would be constant; or, in other words, the ingredients would be compounded by drams containing a fixed number of grains. Then if one manufacturer or manipulator is of opinion that his plates or exposures need more pyro, he can simply use, or direct to be used, an additional amount of drams of pyro solution; or, if he wants more potash or soda, or a combination of both, he has simply to say how much he wants to the ounce of developer, and those who use it will know what they are about and escape from the present darkness of mystery into the light of knowledge. Suppose further that other ingredients are found to be beneficial, for instance yellow prussiate of potash, the substitution or addition is entirely simple, and the effect can be ascertained readily and certainly. In this way the developer can be varied indefinitely and intelligently, and progress gained where now there is little more than groping.

There is an incidental advantage in the use of a small proportion of fluid in the solutions, that in warm weather the addition of water will bring the developer to the temperature of the others. Of course to make this proposal effectual it will be necessary to get the manufacturers of plates and compounders of developers to consent to adopt it; but this, or some other equally practical plan must be followed if we are ever to settle the much disputed question, one that it is probable amateurs alone are competent to settle: Which is the best developer?

SENSITOMETER NUMBERS.

BY G. CRAMER.

Since the introduction of dry plates it has been desirable to have a standard measure of sensitiveness by which the plates can be graded, and several instruments and contrivances are used for the purpose.

The Warnerke sensitometer is used by many manufacturers, but as its numbers do not give the sensitiveness of the plates in direct proportion to them, many manufacturers and myself have chosen a system taking a certain rapidity (of the old wet plate) as a unit, so that the time of exposure can be calculated more easily by the given numbers.

The advantages of knowing the sensitiveness of the plates when making the exposures is apparent, but so far there is no positive means of determining it accurately, as there is no standard light which always remains the same, and consequently no two sensitometers exactly alike; therefore all measurements can only be arrived at approximately, never so exact even as the weighing of groceries or measuring of dry goods can be done. As desirable as it might be if a plate marked a certain number it would always be of the same speed, it will always remain "a consummation devoutly to be wished for."

The sensitometers used by different manufacturers are not exactly alike, and besides this difficulty there are other important facts to be considered.

First.—There will sometimes be a slight difference in the sensitiveness of plates of one emulsion, as it may gain in rapidity, while kept liquid, before being used up.

Second.—It often happens that the plates grow more rapid after being kept a while, so that those which were originally 20 sensitiveness, will sometimes be 25 or 30 when tried again after a lapse of several months.

With all these facts in view, the sensitometer numbers marked on the plates can never be relied upon as absolutely correct, and nothing but an actual trial can give positive certainty as to the correct time of exposure they should have.

* * *

The *Chicago Journal's* Stroller says there is not a sallow-skinned, mole-spotted-faced woman of forty who does not aver that she had a most lovely complexion when a girl. Should her hair be false also, it was magnificent when she was young.

TO THE FRATERNITY.

The P. A. of A. has voted to Jex Bardwell, of Detroit, the sum of one hundred dollars, in consideration of his services to us all in connection with the defeat of the bromide patent and the Shaw silver saving patent. All the older members of our profession will recollect the efforts of the holders of these patents to tax the fraternity many thousands of dollars, and the great annoyance caused thereby; and as Mr. Bardwell is now in the decline of life, and in need of assistance, it is but just and proper that something be done to show our appreciation of his services to our craft.

Our association has started the matter, and all photographers, members or non-members, should contribute something and make up a sum sufficiently large to place him above want.

I am ready to do my share, and suggest that all editors of photographic journals should assist to carry out this benevolent purpose by receiving contributions and acknowledge receipt in their organs.

The cause being worthy, let us all lend a helping hand, and by speedy and marked effort give that assistance which, coming promptly, is doubly effective.

Fraternally yours,

G. Cramer,

President P. A. of A.

OBITUARY.

EDWARD F. HARTLEY.

We are indebted to Mr. T. W. Pattison, of Chicago, for the following extract from the *Chicago Inter-Ocean* concerning the death of this well-known photographer.

"Mr. Edward F. Hartley, the well-known photographer, of 309 West Madison street, departed this life on October 9th, his death occurring at his residence, 56 South May street. A week before he was taken ill with a complication of diseases which none of his three doctors have been able to agree upon.

"Mr. Hartley was but 40 years of age. He was the son of a Methodist clergyman, and was born at Wadsworth, O., on November 9, 1847. He drifted about the country a bit in an uneventful way until he went to Jacksonville, Ill., where he became a photographer in 1873. He was successful there, and soon married the daughter of Judge Boyd, of Carrolton, Ill. This was on October 5, 1873. In May, 1876, Mr. and Mrs. Hartley removed to Chicago and they have lived here ever since. He opened a studio at 309 West Madison street, and from time to time made many improvements.

"Financially he was looked upon as one of the most prosperous and successful photographers in America, a great chemist and a shrewd business man. He reduced the price of photographs to a figure which his rivals considered unjust and unprofitable, and this had the effect of keeping him out of the many photographic associations, so that he competed for no association prizes. He was liberal with the public, and appreciated the value of advertising. He belonged to no church and to no social clubs, finding his solace and his comfort at home in his wife's company. He leaves no children."

OUR ILLUSTRATION.

With this issue of the Bulletin we present our readers with an example of photo-gravure made by the Gebbie & Husson Company, of Philadelphia, who are producing work in this country in competition with the celebrated productions of Goupil & Co., of Paris. The picture is a reproduction of the photograph of the well-known English cutter Thistle, that was sent over to capture the America's cup, but did not. The original negative was taken by Mr. J. S. Johnson, the noted New York marine photographer, who obtained a medal at Chicago.

HOME PORTRAITURE.

BY T. N. ARMSTRONG.

[Read before the British Photographic Convention at Glasgow.]

When requested to prepare and read a paper on "Home Portraiture," I had considerable doubts as to the desirability of selecting such a subject. At first it occurred to me such could have but little, if any, interest to the majority of our professional brethren. On the other hand, seeing we were to have among us so many amateurs, to whom a few practical remarks on what I consider the best means of taking portraits in an ordinary room might be of interest, I deferred to the wishes of those entrusted with our arrangements, and have put together a few remarks which I trust will be acceptable.

It seems to me by far the larger proportion of amateurs give but little attention to home portraiture, nor is it difficult to find the reason, for of this a very general opinion exists that without the aid of a studio, with its special advantages for lighting, etc., an amateur cannot hope to produce results that will in any way compare with professional work. Now I am not one of those who think thus. On the contrary, I maintain, and hope to be able to show you, that there is no reason why an amateur in many instances should not be able to produce really first-rate specimens of portraiture without the aid of a studio.

At the outset, let me say I consider the proper lighting of the sitter of paramount importance, and here it is an amateur who for the first time attempts to take a portrait in an ordinary room is likely to err. In his eagerness to get as much light as possible, the blinds will be run up, the windows scrupulously cleaned, and everything done to flood the sitter with all available light. This using of too much light is one of the first errors a beginner is sure to fall into. If, for instance, we place a sitter near an ordinary window having a good open view, and expose a plate, on developing same it will be found that the contrast from light to shade is too great; the side next the window will be found too light, the off side too dark. What is the reason of this? a beginner will very likely imagine and say, "Oh, it's no use trying, I have not enough light." Now, in reality, such is not the case; it is not that there is any insufficiency of light, but that it is not of the proper quality; or, in other words, is not sufficiently diffused.

Now, seeing that diffused light plays such an important part in portraiture, let us briefly consider what is meant by diffused light, and then how best to obtain it.

There are two kinds of diffused light, artificial and natural. The atmosphere being filled with floating particles, all of which being more or less opaque are continually reflecting and absorbing light, those particles that are transparent are constantly refracting and absorbing light, and this constant changing of the course of the rays until they are thrown into every conceivable direction is called natural diffusion. You will readily perceive we have no power of controlling such. But it is not so with artificial diffusion; in portraiture it is a most important factor, and we must bring it to our aid to soften high lights and break up too strong shadows. But how are we to obtain it? When any translucent screen is made to intercept the direct rays of light, and the atoms of which the screen is composed reflect or refract the rays so that those which come through have lost their general direction, some passing one way, some another, they are said to be diffused. This we call artificial diffusion. To obtain such, procure a very thin muslin screen, which place between the window and the sitter, out of range of the lens, in such a manner that all the rays which fall on the face must pass through the gauze. This done, if we expose another plate on our sitter, we will find a very material change has taken place. Not only have the high lights, which were too hard previously, been softened down so to speak, but the dark side of the face will appear to have been lighted up, thus reducing the violent contrast which previously existed.

Having briefly referred to the necessity of breaking up a too concentrated light, now let us consider the best means of employing a translucent screen so as to throw the light from a proper angle on our sitter.

In making choice of a room for the purpose of taking portraits, choose the one with the tallest windows you can get; the higher the window the better it will enable you to get more top light. If you succeed in getting a room with a high window, begin by blocking out with a brown curtain three feet of the light at the bottom. This is easily done with an ordinary muslin blind run on a stick, and which can be dyed by steeping it in a decoction of coffee. Then, with another very thin white gauze blind, screen off the light to the middle of the window, and then bring into operation your thin white gauze screen, which rests on the top of the bottom sash, slanting inwards at an angle of about forty-five degrees. Now place your sitter as low as possible, and content yourself with taking a head and bust on a light background. This done, you will not only have your light of the proper quality, but from the best direction; your high lights will not be too hard, nor your shadows too deep. Bear in mind, however, when lighting your sitter, that the shaded side of the face is often very deceptive; the shadows must appear lighter to the eye when posing than they will be in the resulting print. To enable you to light up the shaded side of the face, I know of no better or simpler reflector than the homely clothes-horse, over which is thrown a white sheet. In using a reflector, do not throw the light from behind the cheek, but rather throw the light on the front of the shaded side, allowing the back part of the head to be in the deepest shade.

Lest some of you may imagine that this screening of the light will require unduly long exposure, let me here say that, working with an ordinary cabinet portrait lens, my exposures rarely exceed six seconds when using a rapid dry plate. But some of you may say: "What about facilities for various styles of lighting?" In this we are not even tied down. I have brought with me to-night for your inspection a few examples of my home work, and if you examine them you will find several different styles of lighting. It is wonderful what a variety can be obtained with a little practice, working on the lines I have laid down.

I have spoken first of lighting because in my opinion it is the most important of all the many manipulations required in portraiture. Get as much light as you can, but be sure it is of the proper quality; then a little practice will teach the intelligent beginner. It is wonderful how soon he will find out how best to place and light his sitters, so as to obtain proper gradations of high lights, middle tints, and deep shadows. Your chemicals will never give you these if your lighting is wrong; and, beyond everything, do not fall into a practice of under-exposing. Great care must be observed in this. The great point and beauty in portraiture is softness; it is got by properly lighting and fully exposing, and in no other way.

Next in importance to lighting comes posing and expression, and here the amateur is not handicapped, but in reality has advantages which his professional brother has not. One advantage which he has, and which is of great importance, is an intimate acquaintance with his sitters; he will most likely know his or her little soft points beforehand, and what little chord to touch and preparation to make so as to put them in the best of humors. I have seen a cup of tea handed to a lady just before sitting work wonders in the way of making her comfortable. Be ever on the watch for even such a trifle as this, and never lose an opportunity of getting your sitter in a natural vein. In posing, the amateur must study however, and, above all, do not weary your sitter with mauling them about first one way then another. Very likely the first position they will take when sitting down will have something natural about it. Watch for such like a hawk, and if you see they are not going to fall into a natural position, wean them off by drawing their attention to some triviality, such as letting them walk about a bit, or looking at something pleasing or comical. You are, or should not be tied down for time like many a professional; the proper time to be quick is when you have got a good pose and expression. Then be as quick as a needle in a machine if you like. Expression is of the first importance in portraiture. The best hints I ever obtained on posing and expression I derived from what E. K. Hough wrote, and on this head I cannot do better than quote his own words. He says:

"We will suppose the sitter to be the center of a circle with diverging lines, like the hub of a wheel with its radiating spokes. Suppose this wheel twenty feet in diameter, and the spokes one foot apart at the periphery; the junction of these spokes with the rim we will call points, like a compass. Now let us place the sitter at the hub, looking straight before him, body, face, and eyes, to the camera, ten feet away, at the outer edge of the circle; this we may call a position of neutrality—impassive, inactive. Now, the body remaining in front, the head and eyes turning to the left or right, if ever so little, there begins to be expressed activity, thought, emotion, in which the eyes play an important part, and a part that may be largely brought under control, else there was no use describing it. To illustrate. If the head be turned two points away from the camera, the body remaining front, the eyes to express an easy, animated, but not deeply interested, attention, should be turned nearly to the third point. When the head turns from the body to the fourth point, the eyes to correspond should turn nearly to the sixth, thus expressing the same kind of easy, natural interest, but more active and more interested; and this corresponding divergence amounts nearly to a definite ratio whether the turning be more or less, being as two to one. Two of the head from the body to one of the eyes from the face; or, in other words, in turning the eyes to an easy point, right or left, the head must naturally turn about two-thirds the distance. This ratio of divergence we will call normal, and we shall find it giving about the kind of expression generally preferred in portraiture. Moreover, we shall see that any deviation from this normal relation immediately begins to express something different, often something not at all desired. For instance, the body remaining front, with the face and eyes both turned full upon the third or sixth point, or any intermediate point, there would immediately begin to appear an absorbed, deeply interested gaze, expressing anxiety, surprise, or other emotion, according to the rest of the face and action; while should the face remain fronting with the body directly towards the camera, when the eyes turned two or three points away there would immediately appear an uneasy, insincere, jealous, watching expression, not at all pleasant.

"Varying the illustrations by placing the body fronting the third point away from the camera, while the face is turned to the first point, and the eyes into the camera, you will have an easy, direct, sincere, manly attention; while if you place the head and body both pointing to point three, when the eyes are full on the camera you will obtain at once shyness, coquetry, suspicion, or other similar expressions according to the other facial action; then if you point the body on three, while the face and eyes both turn full on the camera, there would begin to appear a bold, domineering, look-you-out-of-countenance sort of expression, or other similar undesirable effects.

"The same principle holds good in looking upwards; for instance, the head slightly raised, with the eyes about half as much more, may express spiritual contemplation, adoration, supplication, etc., according to the accompaniments, while the face remaining level, or slightly drooped, with the eyes still turned upward, looking somewhat from under the eyebrows, will express a cowardly shrinking, a sinister watching, or suppressed anger, according to the other features."

(*To be continued.*)

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

ANTHONY'S
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EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
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E. & H. T. ANTHONY & CO., Publishers.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

SPECIAL MEETING, SEPTEMBER 20, 1887.

THE meeting was called to order at 8.30 o'clock, *President* WALKER in the chair.

The *President*—We called this meeting this evening more for the purpose of getting together such members as happened to be in the city. Of course there are a very large number that are still out of town, or are so busily engaged in getting into town just now, that they cannot be present with us to-night.

I suppose you have all been on your vacations and have done good work. I trust that we shall see the results in the form of lantern slides and other evidences of your handiwork during the season; and I beg of those members who have good negatives that they will make lantern slides of them themselves, or else put them in the hands of the Lantern Slide Committee for the purpose of having them converted into lantern sildes for the use of the association.

I am anxious that this shall be merely an informal meeting, where we will be pleased to listen to discussion upon any matter that members happen to bring before the association. We will however proceed to business first.

On motion of Mr. Granger the reading of the minutes of the last meeting were dispensed with.

The following communications were then read by Mr. GRANGER.

NEW YORK, September 20, 1887.

I take pleasure in presenting to the society, on behalf of Mr. C. D. Irwin, of Chicago, Ill., a Corresponding Member, seventy-one lantern slides illustrative of scenery and life in Japan, India, the Sandwich Islands, Java, Ceylon, and Egypt, made from negatives taken by him on a recent voyage around the world.

I should say that I solicited Mr. Irwin some months ago, at the suggestion of our worthy member Dr. R. H. Lamborn, to permit the society to have copies from his negatives, and was more than gratified to receive this generous gift.

I also take pleasure in presenting a copy of an illustrated catalogue of the Newcastle-on-Tyne Royal Jubilee Exhibition; the September Proceedings of the London Camera Club; and a prospectus of the International Exhibition to be held in Glasgow in 1888, to which I have been appointed a corresponding member. F. C. BEACH.

On motion of Dr. Piffard the communication was received and placed on file, and the thanks of the society tendered to Messrs. Irwin and Beach.

Mr. GRANGER—There is a communication from Mr. William Goodwin, of Glasgow, Scotland.

3 LYNEDOCH STREET, GLASGOW,
July 26, 1887.

DEXTER H. WALKER, Esq.

SIR,—I am instructed by the Glasgow and West of Scotland Amateur Photographic Association to propose to your society an exchange of lantern slides (say 50 or 100 as it may suit you), to be made early in the coming winter.

Our slides would be of the usual English size, 3¼ x 3¼, and the subjects mainly landscapes characteristic of the Western Highlands of Scotland, or views of places famous in Scottish history.

We were much pleased with the American slides lent us by the Camera Club of London, but it was remarked that in some instances the subject might have been at home in Scotland. Should the proposed exchange take place, as I trust it will, we would be glad to have subjects as characteristic of America as possible, and we, on our part, would also be careful not to send pictures that might be duplicated anywhere.

I am, yours truly,
WILLIAM GOODWIN,
Hon. Secretary.

The *President*—I may say that this communication was handed by me to the Chairman of the Lantern Slide Committee, and he has made the proper reply to Mr. Goodwin, and arranged, I believe, for an exchange of slides. We will probably hear further from the committee at an early day. I have received some informal notices of the third international photographic exhibition, which takes place in London on the 25th of October, and I have applied to the sender, saying that they have reached us so very late that I do not think that we could put in exhibits this year.

The Photographic Society of Great Britain have also sent us a communication, in printed form, saying that their exhibition would take place in London on the 3d of October, which I have duly acknowledged, stating that it was impossible to get our society together and make any preparations for any extended exhibit there, but that I would call the attention of the members to it, and would aid such as felt disposed to forward pictures which might be on hand.

If any member has anything to suggest in reference to it I should be very happy to have him do so. These exhibitions taking place, one on the 3d and the other on the 25th of October, and the fact that nearly all our members were out of town, and that the society could not convene until it was too late, as I had no way of communicating with the members as a body, I concluded that it would be better to take no action.

Mr. BEACH—I suggest that when the midsummer notices are sent out, that if any circulars of this kind are received, that some mention of them be made in the notices, so that members would have a chance to contribute if they wished to.

The *President*—Yes, sir; but this was received very recently, or such course would have been pursued, so I postponed it a little while for this meeting. These circulars I will leave so that anybody may read them, and see what is required, and I will assist them in any possible way to forward any exhibits that they wish. They can be sent in their own personal name, or the name of the association, whichever suits them.

I believe there are no other communications. Are there no reports of standing committees?

I hold in my hand a picture that was sent here by Dr. Piffard. As near as I can judge it is an enlargement. It is a photograph of a flash of lightning. A copy of this has been sent to the London Meteorological Society I believe, with similiar exhibits, and he presents this one to the society. I think that the thanks of the society should be given him for it. It is a very beautiful specimen. Of all those I have seen, none surpass this. Dr. Piffard states that it is a platinotype.

On motion of Mr. Beach, a vote of thanks was passed to him for presenting the enlargement.

The *President*—Are there any reports from any of the committees, if so we should be glad to hear them?

Mr. BEACH—I have a final report of the Committee on Joint Exhibitions.

FINAL REPORT OF COMMITTEE ON JOINT EXHIBITIONS.

NEW YORK, September 1, 1887.

To the Society of Amateur Photographers.

In making its final report on the first annual exhibition of the three societies—the Photographic Society of Philadelphia, the Boston Camera Club, and the Society of Amateur Photographers of New York—which took place last March, this committee desires again to congratulate the society upon the success of that exhibition, and also to thank the members for the substantial financial support given it at that time.

The high class of work exhibited; its artistic character; its variety; and its fine technical quality, combined to make the exhibition one of great value, both as regards its educating influences and its effect in encouraging the production of better pictures.

The following is a summary of receipts and expenses.

RECEIPTS.

Season tickets............	$392 50
Admissions...............	221 65
Advertisements............	216 00
Sale of catalogues........	61 55
Wall space...............	49 00
Sale of plates contributed by John Carbutt...........	25 20
Sale of photographs.......	10 00
Sale of frames............	2 60
Packing boxes............	22 45
	$980 95

EXPENSES.

Printing, including expense of catalogue	$363 10
Rent of Ortgie's gallery	300 00
Miscellaneous expenses	123 47
Advertising	102 50
Cartage	26 50
Picture frames	26 07
Hanging and removing pictures	15 00
Commissions paid for pictures sold	4 46
Society's *pro rata* share of design of diploma	13 34
Total expenses	$974 44
Balance on hand	6 51
	$980 95

The above balance has been transmitted to the Treasurer, together with the committee's account book and thirty-three vouchers, in accordance with the provisions of Rule 14, relative to joint exhibitions.

Respectfully submitted,
C. W. CANFIELD.
F. C. BEACH.
JOHN T. GRANGER.
ROBERT S. REDFIELD.
C. E. CABOT.

The *President*—You have heard the report of the Committee, what is your pleasure in regard to it?

Dr. PIFFARD—I move that it be received, placed on file, and the committee discharged.

Motion carried.

Mr. ROOSEVELT—I think the committee deserves a vote of thanks about as much as anybody else.

On motion the society passed a vote of thanks to the Committee on Joint Exhibitions.

Mr. GRANGER—The Committee on Lenses report as follows.

The Committee on Lenses feeling that one of the chief objects of the society is to afford members every facility for obtaining outfits best calculated to give good results, have recently devoted much time to testing various lenses as to their qualities for landscape and other work. From the large number tested by them they have made a selection of several of 10 and 12-inch focus which they deem perfect. They have therefore thought it advisable to notify members who are anxious to purchase a fine selected lens that they may examine, and, if desired, obtain one at the lowest net price on application to either Messrs. Henry J. Newton or Edward Leaming at these rooms.

The *President*—I will state that the following members have been elected: R. E. Stoeckel, Active; P. M. Bradley, M.D., Active; Robert Wilkinson, Associate; Paul G. Thebaud, Active; G. V. Hecker, Active; O. E. Cromwell, Corresponding; C. E. Railey, Corresponding.

I also wish to add in this connection that Mr. Charles F. Smiley has been reinstated by the board as an Active Member of the association. It might not be improper for me to say that I personally consider Mr. Smiley to be almost at the very front of amateur photographers. I do not think it would be improper for me to say that much. He is a man whose work is very superior, and I am proud to know that he has again united himself with this association, and that we shall have the benefit of his advice and fellowship.

Mr. BEACH—Has the board the right to reinstate a member who has once resigned?

The *President*—The board thought so.

Mr. ROOSEVELT—If there is any doubt of it, would it be worth while to move a vote of approval?

The *President*—No, sir; I do not think we can take any action about it. The board controls the matter I suppose.

The President then announced that the Board of Directors had amended the By-Laws, Article II, Section 4, so as to make the initiation fee of Associate Members $15 instead of $5 as heretofore.

Dr. PIFFARD—I would like to ask what is the difference between the initiation fee of Associate Members and the initiation fee of Active Members.

The *President*—None.

Dr. PIFFARD—What is the difference in the functions?

The *President*—None, except as to holding office and voting.

Dr. PIFFARD—What is the object of a man becoming an Associate Member?

The *President*—To obtain the advantages and privileges of association except as stated.

Dr. PIFFARD—Wouldn't it be as well to abolish associate membership? I move that the board be requested to take that into consideration at their next meeting.

The *President*—The board has been considering that very subject.

At the last meeting of the association I read a letter from General Rodney C. Ward, of Brooklyn, relative to a proposed excursion of a party of gentlemen to Northern Idaho, to the remotest corner of the territory, represented as never having been trodden by the foot of man, or at least more than one white man. He requested that we appoint somebody representing this association to accompany the party. Now the cost of this excursion is $1,000 apiece to every one who goes. Thirteen gentlemen started on that excursion on the 25th of August, to be gone forty days. They supplied themselves with provisions, horses and guides, tools of all sorts, and all appliances required on such an excursion, which was intended for the purpose of hunting, viewing the scenery, and making observations. Of course they wanted to have the ubiquitous photographer with them, and they asked us to urge some member of the association to join. I brought the subject before the meeting and nobody seemed disposed to join except one gentleman, and that was Dr. C. M. Hoagland, of Brooklyn, who finally concluded to go, and did join the party as the representative of this association, expecting to be back about the middle of October. I told Dr. Hoagland that I should expect a very fine lot of views. He is a skilled photographer I believe, and if he has any sort of luck at all he ought to bring us back a good lot of negatives which we can convert into lantern slides for the use of the members. So you see we are reaching clear out into the Northwest. We get into an unknown country, which is very delightful.

I have carefully looked over the By-Laws and the Constitution, and I cannot see that there is any exact date fixed for these meetings; that is, I cannot find that Tuesday evening is fixed for any meeting of this association, other than the annual meeting. I mention it because my predecessor called my attention to it, and I wanted to know if I had been guilty of any breach of propriety in calling the meeting at improper times. Still I do not know that it would be worth while for the members to take any action about it, and I only call your attention to it because the Photographic Section of the American Institute, of which Mr. Henry J. Newton is President, meets on the first Tuesday in each month. Now those gentlemen are anxious to attend our meetings, so they say, and some of them are members of this association. I cannot see any reason why we cannot work in harmony with them. They seem to be very friendly and kindly, and have expressed a wish that we would change our meeting evening so that they may be able to attend our meetings. I told Mr. Newton that I would be glad to bring the matter before the association and see if it could be arranged, by having our meetings on the second Tuesday in every month for the discussion of questions and for the transaction of such business as may come before the association, etc.

Dr. PIFFARD—Why wouldn't it do to make it the first Wednesday instead of the first Tuesday?

Mr. BEACH—He said the second Tuesday.

Dr. PIFFARD—Then as to the second meeting in the month, what day would that fall on?

The *President*—I wish you would discuss this question. We have lantern slide meetings you know, and it is questionable whether we want two of those a month or only one. Suppose we say the second Tuesday for our business meeting, and the fourth Wednesday for lantern slides.

Mr. GRANGER—Wednesday is prayer meeting night all over the country.

Dr. PIFFARD—How about Thursday?

Mr. BEACH—Why not have it the fourth Friday?

A MEMBER—Why not have it the fourth Tuesday; the second and fourth Tuesdays?

The *President*—I want you to discuss it. We ought to fix it at some period of time that would be the most convenient to the majority of the members.

Mr. BEACH—I would state, Mr. President, that the society, ever since it was organized, has always held a regular meeting on the second Tuesday of each month. You will find that stated in the calendar which we issued last fall. In that calendar it is stated that the special meeting shall occur on the fourth Wednesday of each month.

Mr. ROOSEVELT—Are those the days we used to meet, the second Tuesday and the fourth Wednesday?

Mr. BEACH—Yes, sir.

Mr. ROOSEVELT—I move then that those dates be restored; the regular meeting on the second Tuesday and the exhibition meeting on the fourth Wednesday.

The *President*—It is proposed that the regular meeting shall take place on the second Tuesday in the month and the lantern slide exhibition on the fourth Wednesday of each month. Those who are in favor of that motion will signify the same by saying aye.

Motion carried.

The *President*—Then gentlemen, in accordance with that resolution the next business meeting of this association will be held on the 11th of October at these rooms; and the next lantern slide exhibition will be on the 26th of October.

Mr. Lawrence wishes me to say that he will show some thirty or forty Nassau views of his own, and there will be several other slides which will be handed in.

I do not know that I have anything else to bring before you in the way of business. We have some papers to be read this evening by some of our members. They are of interest and perhaps there will be some little discussion upon them. I will call upon Mr. Beach to read a paper, the subject of which I am not aware of at this moment. [See page 620.]

After reading his paper, Mr. Beach exhibited negatives and prints to illustrate the different colors of the plates. Both negatives and prints were numbered 1, 2, 3 and 4, to correspond with each experiment. No. 4, Mr. Beach said, was developed with potash and bromide of cadmium.

A *Member*—Is not *f*-16 rather a large opening for marine views? I rarely use larger than *f*-40. That is on lightning plates *f*-16 would give me a very thin, over-exposed negative.

Mr. BEACH—I have used *f*-16 on a very bright day and with considerable alkali in the developer on a Cramer No. 30 plate.

The *President*—For a water view?

Mr. BEACH—Yes.

The *President*—Mr. Newton has said very often that he notices great difference in the light in taking pictures of water scenes and in landscape views, and he is particular to reduce the opening very materially. He expressed himself very clearly on that point the other evening.

Mr. ROOSEVELT—I was going to say that was my experience. I have taken a great many water views in my progress as a photographer, and I find that the light is so very uncertain that you cannot judge the difference by your eye, and yet there is a wonderful difference in the result. Some of the pictures would be entirely under-exposed and the others, taken under absolutely the same circumstances, would be rather the contrary.

The *President*—It takes a trained eye to judge of the light. A man cannot judge within fifty per cent., and that is a very large percentage, of the value of the light and its actinic force.

Mr. BEACH—I might say in this connection that I went down the bay to-day to witness the explosion of a dynamite shell on a schooner furnished by the Government, and I took with me an 8 x 10 camera and a Ross lens of 14-inch focus. The light was extraordinarily yellow and misty, but I used a stop *f*-16 and only a single combination of the lens, which made a focus of about twenty-eight inches. I imagine the plates, although they were Cramer 30, will be quite under-exposed. I held the camera on the tripod, and was obliged to use the single combination of the lens in order to make the schooner of some size, as she was anchored over a quarter of a mile off from us.

The *President*—I suppose Mr. Roosevelt has something to say on developers. You know he is thoroughly familiar with the subject and will do it justice.

Mr. ROOSEVELT—I have called this paper "The Standard of Developer." [See page 624].

When Mr. Beach was reading his paper none of us could tell what kind of pyro or accelerator he had used. It was only when he followed it up by saying how many grains he had used to the ounce that we knew anything about it. I was trying to multiply and divide and ascertain how much he had in the dram of his developer. Now, if we agree on a certain amount to be used, as to how many grains shall be used, then we will know what we are doing and how much we have in our developer.

Mr. BEACH—I would state that the solution of pyro that I had was based on the ten per cent. principle. That is, there were forty-eight grains of pyro in each ounce of the solution, and there are eight drams to each ounce, therefore if you divide forty-eight by eight you get six grains of pyro to one dram.

Mr. ROOSEVELT—If you had said I used so many grains to a dram then I would know exactly what you were using.

Mr. BEACH—I did say that in my paper.

Mr. ROOSEVELT—You did, but at first it was difficult for us to understand.

The *President*—As I understand it, there is no difference between Mr. Beach's formula and your own, Mr. Roosevelt?

Mr. ROOSEVELT—No, sir; I was only using his paper as an illustration of the difficulties which beset us. You take up an ordinary formula and you do not understand it until you multiply, add, and divide each separate solution.

Mr. GRANGER—I have been very much interested in these papers, and I will say, for one, that I have obtained to-night some valuable information from them, and think they are worthy of being brought before the society in a more official form and after more continued study. I therefore move (it seems to me to be the best disposition to make of them) that they be referred to the Committee on

Developers, and that that committee be instructed to take them up and give us further information upon them, with an expression of their views as a committee.

The *President*—If there is no objection, it is so ordered.

Mr. GRANGER—I further want to move a vote of thanks to these gentlemen for these papers. They show great research, and I think that is their due.

The *President*—They are valuable as showing research and study. We will be glad to hear from members when they have any papers that are understandable and valuable. It is one of the objects of the association. You have heard the motion for the vote of thanks; what is your pleasure in regard to it?

The motion was then carried.

The *President*—I do not think there is anything else before the association, except that I want to show this developing tray which Mr. Granger has brought here. It is a very ingenious and a very simple device. It opens and shuts in two parts, opening and shutting upon a rubber surface here in which the plate is laid. I will ask Mr. Granger to explain it in detail.

Mr. GRANGER—This rubber band shuts down upon it and makes it water-tight, and the developer is poured on the inside, running all over the plate. About an ounce of developer in there would cover the plate. I have not lost a plate with it and I have never had one fogged in any way or any trouble with finger-marks. As the developer does not get to the edges of the film it tends to prevent frilling very effectually, and it is easy to judge of the density, because you can hold it up to the light, being deep enough for none of the developer to drop out. When you are through you can pour the water in there and wash it. I also found it very convenient in developing bromides, and I have never seen a drop of the developer escape. It works nicely, readily, and quickly. It can be washed and the solutions poured over it conveniently and quickly.

Mr. ROOSEVELT—Don't you wet the paper before you put it in there?

Mr. GRANGER—No; I put it in dry and pour the developer on it.

Mr. BEACH—It is a very curious coincidence that a tray constructed precisely on that principle and patented by some one in Newark, was presented to the society and can be found upstairs.

The *Chairman*—I will appoint you a committee of one to find it.

Mr. BEACH—It was upstairs, and if there is a patent on this tray it must relate to some special method of fastening.

Dr. PIFFARD—Anthony showed me one in process of construction fully a year ago involving the same principle.

Mr. BEACH—I have a slight improvement here on what is called the Warner plate holder. This plate holder was shown some time ago, and the improvement consists in making a zinc slide with a roughened surface for the purpose of writing upon it. Of course there is nothing specially new about that. This is a metal slide and the others are made of some composition. Perhaps some of you have not seen how this plate holder works. There is a lever on one end here which you simply raise and bend right up like that [indicating], and there are some springs underneath which raise the plate up and make it convenient to take hold of and remove from the frame. When you wish to put the plate back again you simply put in the ends here, turn it right down, and it is all in place. It is self-locking. Mr. Warner claims that it is a perfectly light-tight holder, and admirably adapted for instantaneous work. The only difficulty that I can see about it is it is a little heavier than I desire. He claims that the brightened surface on the side here [indicating] does not affect the plate at all.

Mr. GRANGER—Whose make is that, Mr. Beach, and what do you call it?

Mr. BEACH—It is made by N. P. Warner, and I think it is called the "Manifold."

Mr. ROOSEVELT—It is not for sale in the city, is it, Mr. Beach?

Mr. BEACH—I believe not, sir. They are made in Holyoke.

The *President*—I wish to show a Beck lens with an iris diaphragm, the most convenient diaphragm I know of. I got it of Mr. W. H. Walmsley, of Philadelphia, and I want you to examine it.

Mr. ROOSEVELT.—Is there anything to show how much light you shut out?

The *President*—Yes; the sizes of the diaphragms are registered on the barrel of the lens. It is one of the finest things I ever saw. I think the Beck lens is the only one that has the iris diaphragm.

Mr. ROOSEVELT—Does it make any difference if the form of the aperture be regular in outline or circular in shape?

The *President*—No, sir. That is, it makes no appreciable difference whether there be a square hole or a round one.

Mr. BEACH—I move we adjourn.

Motion seconded and carried.

[*From Photographisches Wochenblatt.*]

HYDROKINONE DEVELOPER.

BY F. BIERING.

SATURATED baryta water, diluted with two parts water, will make with hydrokinone a very good developer, and handsome, grayish-black negatives. The latter must be washed thoroughly before fixing, or an insoluble precipate will form in the film. Lime water will also give very good pictures, although they are of a yellowish-gray tint. The lime will act excellently if dissolved in sugar-water, in which it dissolves much quicker and better. The depth of the black will increase with the quantity of the sugar dissolved, and an increase of warm tones are obtained by a proportionate quantity of hydrokinone. The best way to do this is to fill a bottle one-third with slaked lime and the rest with sugar-water, 6 to 100; shake well and then let it settle. The liquid is then poured off, but new sugar-water is added as long as the solution so obtained is active. To this lime-sugar-water 7 to 10 parts alcoholic hydrokinone solution, 1 to 20, is added to each 100 parts to form the developer.

If the picture appears slowly, that is, is under-exposed, the development is continued until fully brought out; if it should come very slow the hydrokinone is reduced, and, if necessary, the development is continued from a quarter to one hour. If the picture appears rapidly, that is, correctly exposed, but rather flat, hydrokinone can be added. If very quick, a few drops of bromide of potassium, 1 to 10, are added; or the plate is laid for some minutes in a weak solution of bromide of potassium, after which it is again placed into the developer. Before fixing it has to be thoroughly washed.

Fogs that might originate from the lime are removed in a water bath acidified with a little acetic acid. An alum bath is unnecessary if the fixing bath is not more than 1 to 5. The latter should be used for these plates only, as otherwise yellow coloration might easily take place. This will follow also if the developer does not cover the plate entirely.

Hydrokinone is particularly suitable for transparencies, on account of the handsome warm tone which can be obtained; probably, also, for paper negatives.

The exposure is much shorter for the hydrokinone sugar-lime developer than for oxalate, and it is cheaper. The plates are also softer, and in the amount of detail are very much superior.

The plates for which the above described sugar-lime solution is used develop very quickly with all detail, being finished in from one-half to one minute. But they have to be approximately correctly exposed. Longer development increases the strength, but gives no more detail. If thinner negatives are desired, the developer is diluted with an equal quantity of water. It is very cheap, and the plates are not higher in price than the ordinary ones, on account of the small quantity of hydrokinone used. Alkalies, other than lime and baryta, do not act so well, potassium and soda being slower, and ammonia slower yet, and the picture is also flat.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING OCTOBER 4, 1887.

President NEWTON in the chair.

The *Secretary* reported the usual periodicals contributed monthly to the society, and a vote of thanks was tendered to the publishers for their liberal contributions.

The Chairman of the Executive Committee announced that the subject selected for the evening was "Photography as an Aid to High Art," but as the gentleman who was to speak first on this subject, from some unknown cause, was not present, it would devolve upon the President to appoint some one to fill the vacancy. He also announced that there would be exhibited, after the close of the regular exercises, a collection of photographs that had been awarded the most valuable prizes at the Chicago Convention. He further stated that the programme for the regular meeting on November 1st was not yet fully decided upon, but that it was expected that the President of the Society of Amateur Photographers of New York, Dexter H. Walker, would be the principal speaker of the evening, and if so his subject would be announced in the notices mailed to the friends and members of the section.

The exhibition of photographic apparatus being next in order, the chairman introduced Dr. J. J. Higgins, who exhibited and briefly explained what is known to photographers as a finder. The construction of this finder, the doctor stated, he knew to be free from many objections he had experienced in the use of others, and therefore could safely recommend it in properly locating on the sensitized plate rapidly moving objects that must needs be taken in the fiftieth part of a second or less.

The finder was examined by a number of experts in the audience, and there being no exceptions taken to all the doctor claimed for it.

The *President* announced the literary subject of the evening and called on

Mr. WILSON MCDONALD, the sculptor, to speak on the subject announced for the evening. After a decided demonstration on the part of the audience in its favor, Mr. McDonald took the stand and entertained his auditors with apt and forcible illustrations and definitions of high and low art, and how photography had contributed to both, especially the latter.

Dr. EDWARD L. WILSON, the editor of the *Philadelphia Photographer*, was next called upon. After vainly pleading to be excused, he entered at once upon the subject in hand, occupying the time up to the usual hour of adjournment in the expression of thought not only useful to all lovers of art, but in forms of expression indicative of scholarship and familiarity with the subject under consideration.

The literary portion of the evening being thus concluded, the President invited all who had any curiosity to see some of the best photographs ever exhibited in this country, or perhaps in any country, to remain and critically examine and judge for themselves as to whether he had over-estimated these works of art.

After the examination, a multitude of ayes confirmed the President's opinion, and cordially tendered to Dr. A. H. Elliott, and to E. & H. T. Anthony & Co., a hearty vote of thanks for the labor and expense in thus presenting before the section a class of pictures never equaled by any former exhibits of the institute.

A vote of thanks was also tendered to Dr. Ehrmann and the Scovill Manufacturing Company for the loan of their valuable and attractive collection, after which the meeting, on motion, adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held on Wednesday evening, October 5, 1887, *Vice-President* JOHN G. BULLOCK in the chair.

The Committee on Membership reported the election of Messrs. Edward P. Alexander and T. Bowman Price as active members.

Mr. JOHN G. CASSEBAUM, who was present by invitation, read a paper on the gallic acid and silver intensifier as applied to gelatine plates. [See next BULLETIN.] It was listened to with great interest, after which specimen plates intensified in this manner were shown and the process demonstrated by actual experiments.

Vice-President BULLOCK and other members who had tried the method spoke highly in its favor.

Mr. CARBUTT showed a number of prints made from over-exposed plates, originally so thin that mercurial intensification had failed to produce printing density. A further application of gallic acid and silver resulted in great increase of density, and excellent prints were thus obtained.

Dr. J. M. JORDAN showed one of Cooper's enlarging lanterns, and illustrated its use by making some enlargements with Anthony's bromide paper. The light (which is supplied by a kerosene lamp fitted with a duplex burner) passes through two condensing lens and thence through the negative. By means of a small portrait lens the image is projected against any perpendicular surface to which a piece of bromide paper may be attached. By means of the lantern shown, cabinet size negatives could be enlarged life size or over. A valuable feature of the apparatus was that by detaching the lamp, the camera portion could be adjusted in a window so as to use daylight as a source of illumination. When so arranged negatives as large as 8 x 10 could be enlarged from. The camera could be used for copying purposes, having extra long bellows, and by further changes in the adjustment an excellent optical lantern was produced. The paper used by Dr. Jordan was much more rapid than most brands of bromide paper, and it was claimed that equally good results could be obtained from negatives which varied greatly in density.

Mr. WOOD stated that he had lately examined some film negatives made about a year ago and had found them covered with mold.

Mr. WALMSLEY thought the trouble was caused by neglect to coat the films on both sides with thin collodion. This would keep out the moisture, which probably caused the mold, and was now recommended by the makers.

Mr. BULLOCK called attention to a defect which he had frequently noticed of late in plates of several different brands. Minute particles of chrome alum seemed to be present in the film, producing dark spots in the negative, sometimes partially redissolved in the washing and causing a cement-like streak on the plate. He suggested that they were caused either by careless filtration or perhaps crystallization of the alum in the emulsion.

Mr. Carbutt thought the quantity used was too small for the latter suggestion to hold good.

Dr. Wallace called attention to an article in a recent German journal, which gave some new details of the Obernetter process for transforming a transparent positive into a negative. The positive must be greatly over-timed, and over-developed in ferrous oxalate. After washing, a weak solution of chromic acid is applied, which is in turn washed off and a solution of ammonia applied, the sensitiveness to light being thereby restored. The plate is then exposed to white light for a sew seconds and reimmersed in the ferrous oxalate. The negative image now slowly appears, and when sufficiently strong the plate is fixed as usual. To succeed with this curious process the plates must be coated with an emulsion that contains but little gelatine (gelatine-arm), and some practice is necessary before perfect results can be expected. The great over-exposure and thorough development following, are mentioned as important points.

Mr. W. D. H. Wilson showed one of Gray's new model vest cameras, made for taking four pictures on a plate, each $2\frac{5}{16}$ inches in diameter, a cenvenient size for making lantern slides by contact. The camera was provided with a circular case in which it could be carried and used as an ordinary detective camera, its shape and appearance being such as to attract but little attention.

Adjourned.

Robert S. Redfield,
Secretary.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—J. F. L. writes: Will the Bulletin please throw some light on the following subject. On what does the fineness of the particles of reduced silver in the photographic image depend? Every one must have observed the difference in negatives in this respect. Owing to its granular nature a photographic image does not well admit of being highly magnified. A natural surface magnified gives increasing detail with the power of the microscope; in its negative image we soon reach a limit to detail. A hair magnified is still well defined, showing greater detail in surface; its image shows an ill-defined line of coarse, granular particles of silver. In a gelatine plate does the fineness of the particles in the emulsion have anything to do with the result? If not, how may it be affected in development?

A.—The fineness of the particles in the negative image depends upon the size of the particles in the gelatine emulsion used. A very sensitive emulsion contains much larger bromide of silver particles than one that is not so sensitive. It is also possible that the rapidity of development has an effect on the size of the silver particles, slow development giving fine granulations, rapid development coarse ones.

Q.—F. E. H. writes: Kindly let me know, through the columns of the Bulletin, the formula of a good toning bath that will give nice rich purple tones, and the way to use said bath; also how long it will keep. What is the best book you have on printing, toning and doctoring the negative for the amateur?

A.—Use Hunter's toning bath, the formula for which is given in the Bulletin for April 9, 1887, page 223. A good book on printing and toning is "Silver Printing," by Abney and Robinson, issued by our publishers. For retouching get "The Art of Retouching," by Burrows and Cotton, also issued by our publishers.

Q.—Mrs. E. V. C. writes: Will you please tell me how to retouch a negative when there are imperfections in the face. Also when a face looks dark enough on the negative to print light, but does not, what will make it do so? A few hints on retouching will help me a great deal.

A.—We cannot give in these columns any information that would be useful in retouching, it is a matter of practice and object teaching. A good retoucher could teach you more in five minutes than we could in five numbers of the Bulletin.

Q.—J. D. R. writes: As I am a reader of your valuable Bulletin, would like to ask a few questions, which you will please answer through its columns. My printing room is 6 x 10 feet, south window. I keep fuming box, hypo keg, and all my chemicals in this room; are they injurious to my prints and paper, and if so, in what way? Will light from this window damage chemicals on shelves in this room? If so, which should be kept from white light? How can I tell when hypo is out of prints? Should the hypo bath be 30 grains strong? Where we have not the advantage of running water, is four or five changes and one hour long enough to wash prints? Does it not bleach and injure prints to leave them in water over night? My operating room is 16 x 36 feet, very bright north light; nothing to obstruct side light, 6 feet from west end, commencing at floor, 7 feet high, and 7½ feet wide. Top light 7½ x 12 feet about 45 degrees pitch. Both side and top lights are lined with white tissue paper. White screens, 3 x 7½ feet, iron rings sewed in edges, stretched close to sky-light. I move them each way on wire with a long stick. Can I improve this in any way to make a better effect in my pictures? What can I do with an old tintype bath that is strongly acid, to make it fit for coating paper? How much liquid ammonia should be put in one quart of coating bath when four or five sheets are coated at a time? Should a little silver be put in every time bath is used? Please give me a good formula to make negative varnish for retouching. Is Anthony's Diamond Varnish suitable for negatives?

A.—It is a bad plan to have many chemicals in a printing room; the dust will certainly get into the paper and spoil the prints; hypo is especially injurious and would give yellow prints. None of the ordinary chemicals are injured by light. Thirty grains for the hypo bath is rather weak, one in eight is better. If you cannot get more water you may be able to wash prints in four or five changes, but they should be well moved in each change of water. Don't try to use an old tintype bath for paper, precipitate it and send it to the refiner. In adding ammonia to the silver bath, take one-third of it and add the ammonia till the precipitate first formed is just redissolved. Now add the other two-thirds. Fresh silver should be added from time to time to keep up the strength of the bath. We do not know a good formula for retouching varnish; consult a book on retouching. Anthony's negative varnish is good for negatives.

Q.—W. W. T. writes: I have two plates that I prize very highly, one got stained in developing and the other I presume in intensifying, which defects I have not been able to correct with the alum bath. What can I do with them?

A.—Try the alum bath with half an ounce of citric acid in the quart of solution, or the same amount of hydrochloric acid. If these will not do it we cannot help you further.

Views Caught with the Drop Shutter.

As we go to press we note the death of GUSTAVE ROBERT KIRCHHOFF, the celebrated German scientist, and the colaborer with Bunsen in spectrum analysis. He was 64 years old. We shall give a more extended notice in our next issue.

RICHARDSON, the portrait photographer of Easthampton, Mass., sends us some examples of his new process of enameling. They are certainly very excellent pieces of work of this character.

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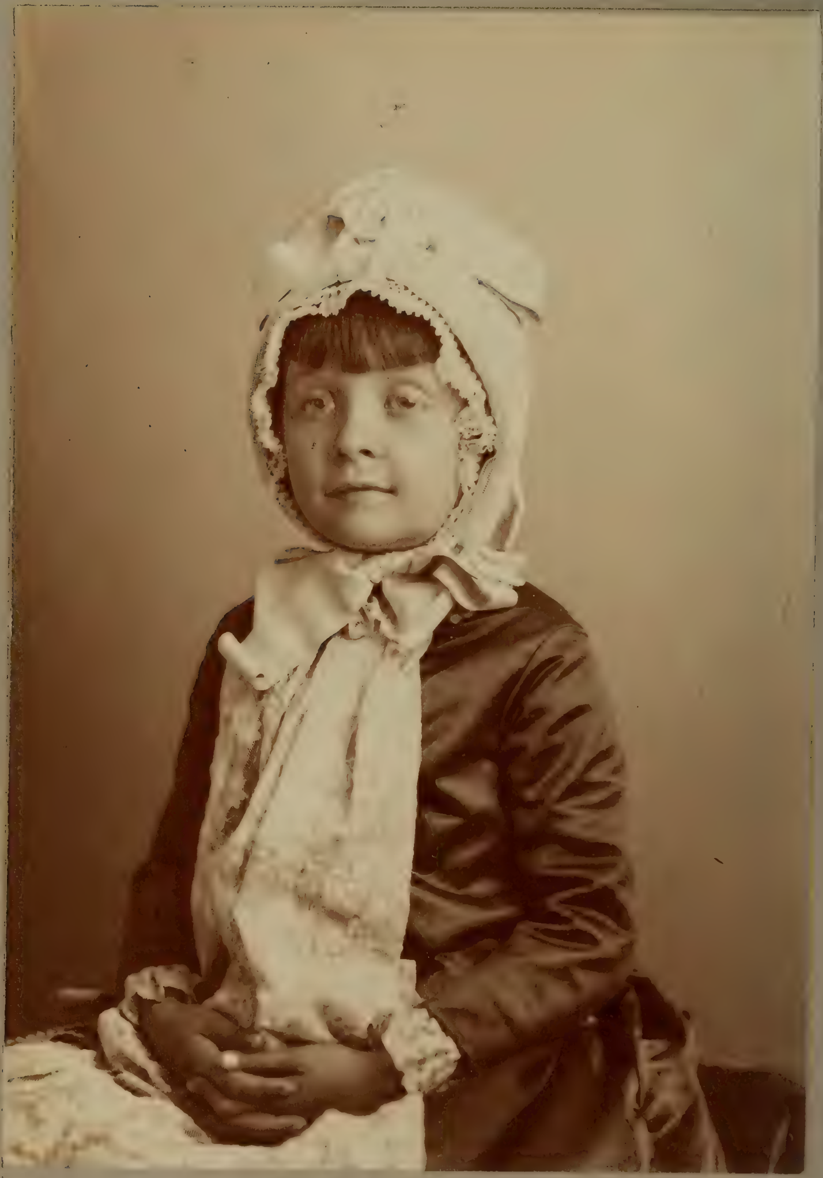

Instantaneous Photograph at Night
BY
Geo. G. Rockwood.
Illuminated by Dr. H. G. Piffard's
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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

NOVEMBER 12, 1887. Vol. XVIII.—No. 21.

WHAT IS HYDROQUINONE?

The above question having been put to us by a number of our friends, we thought it would not be uninteresting to give our readers a brief review of the chemistry of this new developing agent and some statement of its general properties.

A few words may not be out of place here in explanation of the method of spelling the word as given above. Some writers in English use the term "hydrokinone;" but in looking into the matter we find this is simply an adoption of the German word without much change; whereas the correct English word used by the best scientific authorities is "hydroquinone." The reason for the latter method of spelling appears to us to be a good one; it is because the body under discussion was formerly obtained from quinic acid, one of the substances associated with quinine in Peruvian bark. We therefore prefer the word hydroquinone rather than hydrokinone, and for like reasons we reject the word hydrochinone, also used by some authorities.

Hydroquinone belongs to a class of organic bodies that the chemist calls diphenols, and hence it is sometimes called Quinol; but the former name is that more commonly used. It was first obtained by Caventou and Pelletier, about the year 1820, as a product of the dry distillation of quinic acid, a compound found in Peruvian bark and a by-product in the manufacture of the well known alkaloid quinine. The above chemists did not make a thorough examination of the body, and called it pyroquinic acid because they obtained it by heating quinic acid. Some time afterwards Wöhler found that he could obtain the same body by combining hydrogen and quinone (a product of the oxidation of quinic acid with manganese dioxide and sulphuric acid) and gave it the name it now bears, hydroquinone. He further found that hydroquinone could be best prepared by passing sulphurous acid gas through a warm saturated solution of quinone which has some of the undissolved substance suspended in it.

It is very interesting to note how the researches which had for their object the artificial production of the alkaloid quinine have also given us a long list of new chemical compounds that are gradually becoming useful to man as their properties are studied. Hydroquinone is one of these bodies, and although we cannot make quinine from it, yet there appears to be a great field for it in its applications to photography.

After hydroquinone as a product of the dry distillation of quinic acid had

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been studied, it was found to be obtainable from other sources. The leaves of the bearberry (*Arbutus uva ursi*) contain it combined with glucose, also the leaves of wintergreen (*Pyrola umbellata*). From both these sources it can be obtained by boiling the aqueous extract with dilute acids. But further study showed it to be related to benzol, the product of coal tar, and a process was soon devised to manufacture it from aniline, which is a derivative of benzol and the source of so many interesting organic compounds. The method of procedure is as follows.

One part of aniline is dissolved in eight parts of sulphuric acid and thirty parts of water, and to the cooled solution two and a half parts of potassium bichromate dissolved in water are gradually added. To the brown fluid thus obtained potassium sulphite is added, and the whole mixture is finally shaken with ether. The ether is allowed to rise and the fluid below is drawn off and rejected. By distilling the ether solution a residue is obtained which is dissolved in the smallest quantity of hot water; sulphurous acid and animal charcoal are then added, and the solution is boiled and filtered. On standing the hydroquinone separates out in hexagonal rhombohedral prisms.

The substance thus obtained sublimes in monoclinic plates, which on solution in water again gives the crystals mentioned above. It has a slightly sweet taste and melts at 169 degrees Celsius. It is readily soluble in hot water, alcohol and ether (at 60 degrees F. 1 part takes 17 parts of water for solution). It reduces silver nitrate solution, and also alkaline solution of copper sulphate. It forms a compound with sulphurous acid gas, which may account for the fact that it works better in a developer which contains sodium sulphite. It may possibly be still further improved by adding sulphurous acid to this solution of sulphite and hydroquinone. The result of its oxidation is quinone, the product mentioned above, which is also obtainable from aniline by oxidation.

We have given our readers a brief review of the principal chemical properties of this exceedingly interesting developing agent. It is not as energetic as pyrogallol in its reducing power, but the results obtained are softer and the negatives are less liable to be stained. Furthermore, the fact that the reducing action of the developer is less energetic, allows of its better preservation, and the same solution can be used for the production of a great many more negatives than a similar solution with pyrogallol as the active agent. At present the price of hydroquinone is considerably higher than pyrogallol, but should there be a demand for this new agent it will be manufactured cheaply, and the reduction in price will be similar to that which took place when pyrogallol became a popular developer.

We recommend all our readers to try this new developing agent, and even at the present prices the advantages and comfort obtained in its use fully compensate for the extra expense incurred in using it.

EDITORIAL NOTES.

We call the attention of our readers to the letter of Max Bolte in this issue of the Bulletin on the ownership of the negative. This is a question of considerable importance, and sooner or later will be the subject of a lawsuit. The point at issue has been very much discussed in English journals, and we should be very glad to open our pages to an intelligent discussion of the question in the United States. We hope our readers will let us hear from them.

A "Camera Club" has been organized at Portland, Oregon, and we hear that the members are numerous. The club is in a prosperous condition. The *President* is Frank Woolsey; the *Secretary*, W. T. Woodward; and the *Corresponding Secretary*, W. W. Bretherton. We heartily wish them every success.

We are indebted to the Gebbie & Husson Photo-gravure Company, of Philadelphia, for two of the handsomest examples of their work we have yet seen. One of these is a photo-gravure reproduction of Munkacsy's picture, "Christ before Pilate," the other is "The Harp of Tara." As examples of the wonderful photo-gravure process they are equal to the work of Goupil, of Paris, who has a name known around the world. They are remarkable also for their large size, the reproduction of Munkacsy's picture being fifteen and a half by twenty-four inches, the other plate being twelve by eighteen inches. One of the most noteworthy features of this Gebbie & Husson process is the admirable reproduction of the details in the shadows, a point of weakness in many of the other photo-gravure methods, both American and European. The prints before us are said to be trial proofs; but we must confess we cannot see how they could be very much improved, they are so full of clear, fine work, and all that gives force and character to an engraving, which they are intended to supersede. Altogether we think this new process is a decided success and destined to fill a place of great usefulness in the graphic arts.

We have before us a reprint from the *Journal of the Society of Chemical Industry*, of the paper of Professor C. H. Bothamley, F.I.C., F.C.S., on "Orthochromatic Photography," for which we tender the author our best thanks. We think Professor Bothamley is doing some excellent work in this field of photographic research, and he has our hearty good wishes for success. The field of labor is a large one; there is room for many workers; and who would not enter such a domain where Vogel, Eder and Schumann have gathered such rich harvests of photographic knowledge? If our crowded columns will permit, we hope to reprint this interesting paper by Professor Bothamley.

Experiments with Dr. Piffard's magnesium light continue to engage the attention of many photographic workers. Mr. George G. Rockwood has taken hold of the question in a truly practical way, and has obtained some very interesting results. It appears to us that this process is destined to become a permanent adjunct to every well appointed studio. Even in taking groups the good results obtained upon the first trials leave but little to be desired as to the power of the light, although something has yet to be learned in regard to the best distribution of the illumination over large spaces.

The appeal of Mr. Cramer for the fund for Jex Bardwell has already called forth contributions. We are in receipt of the first amount intrusted to us for this worthy object, and hope our readers will bear the matter in mind. Let each one do a little and the total will be a great help to our brother who is in need. It is not the amount given, but the way it is given, that is true charity.

In faith and hope the world will disagree,
But all mankind's concern is charity.

We have another interesting addition to the decorations of our office, and this is a life size head of Mr. George Ayres, the well-known traveler for our publishers. This handsome photograph is worthy of the man that made it, our good friend Fitz-Guerin, of St. Louis, and it is also worthy of the genial-hearted good fellow that it delineates. The artist and the subject are evidently in sympathy and the result is one of those life-like productions which lead us to exclaim with the poet,

> "What demigod has come so near creation,"

the character in the picture is so truly like the original.

The new argentic plate shows a great improvement over those formerly put upon the market. The whites are better and it works three times as quickly as the older plate, while the development takes about half the time. The last and best improvement is that these new plates can be dried by heat and delivered in two or three minutes. Of course such plates will work in any climate and stand any amount of heat without softening or frilling. It appears to us that if these improvements are maintained, ferrotoype dry plates are approaching perfection.

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[*From our Special Correspondent.*]

ENGLISH NOTES.

The literature of photography continues to increase. Captain Abney has just issued a little primer on "Negative-making," which is a reprint of some notes he contributed last year to the *Boy's Own Paper;* and I have also received from Messrs. Welford and Sturmey—names well known in the cycling world—a copy of the "Photographer's Indispensable Hand-book," which includes descriptions of "200 cameras, 150 lenses, 40 tripods, 45 shutters, 40 lamps, 140 kind of dry plates," etc. It is, in fact, a sort of combination of all the makers' catalogues, and as such is very useful.

Complaints have been rife of late as to the blistering of albumenized paper. I find that if the prints are transferred straight from the toning bath into a solution of common salt, made by dissolving half a pound of salt in a gallon of water, the bistering is prevented. The prints should be allowed to soak in the salt water for ten minutes, after which they may be transferred to the fixing bath. The salt appears also to give a more brilliant appearance to the prinis.

The London Camera Club continues to grow in numbers and in usefulness. The number of members now exceeds 350, and the monthly Proceedings issued by the committee, of which eleven numbers have now appeared, is a publication of great interest. Two members of the club, Messrs. Lyonel Clark and E. Ferrero, have just completed a most useful task, viz., the publications (in the Proceedings) of a table showing the proportions per ounce of developer of all the ingredients. The revised table gives this for sixty makes of plates, which may be regarded as practically the number in the market at the present time, an ample choice it must be admitted. For my own part I do not like the cheap plates which have been the rage lately; they are necessarily poor in silver, and it cannot be expected that much care in cutting the glass, coating, examining, and packing can be devoted to a plate which is to be sold at a quarter dollar per dozen for quarter plates. But it may be urged, "Oh, but Mr. So-and-so, the famous photographer, has tried these plates and found them excellent. The company publish testimonials from him to that effect." To which I reply: "How do you know that you will get plates from a similar batch to that supplied to So-and-so?"

There is one point with respect to most plates which I fail to understand. Why should large size plates—whole plates for example—be sold at a higher proportionate price than quarters? Thus, in our market, if quarter-plates are sold at a quarter dollar per dozen, it will be found that whole plates are charged, not a dollar per dozen, but it may be 1¼ dollars. And yet most plates are coated as whole plates, and the cutting, packing, etc., they subsequently undergo to convert them into quarter plates ought to make the latter cost more than the former, and not *vice versa.* I fail to see that the argument: "Oh, but there are more quarter plates than whole plates sold," has anything to do with it. There are more quarter pounds of sugar than pounds sold in this city, and yet the grocer does not charge more per pound than per quarter pound, indeed he would readily admit that it would be only fair to do the opposite. I think users of whole plates ought to press this point upon the plate makers.

The event of this month (October) is the opening of the annual exhibition of the Photographic Society of Great Britain at the galleries in Pall Mall, London. The society was established in 1853, and for thirty-four years the best photographs produced in these islands have been gathered together yearly to compete for its medals; in fact, the exhibition may be said to be largely instrumental in sustaining the society and enabling it to pose as, what of late years it certainly has not been, the leader of photographic progress in Great Britain. In my next I hope to give the readers of the BULLETIN my impressions of the show.

The London Stereoscopic Company—the enterprising firm of which Lord Mayor Nottage was the founder and head—also announce an exhibition of the prize pictures sent in by amateurs in response to their offer of "£50 in cash; two gold, fifteen silver, and thirty bronze medals." I have also received circulars respecting exhibitions at Dublin, Dundee, etc., and in fact the exhibition season seems setting in with great severity.

As to medals, and prizes generally, they seem to me to be "necessary evils." They act as powerful incentives to work, and without them I am afraid the number of photographs sent in for competition would be greatly diminished; but they produce much bad feeling, and their proper award is a matter of great, of very great difficulty.

Films continue to grow in favor here, and I know that the Eastman Company have had some difficulty in keeping the supply equal to the demand. There is something very attractive in negatives (like some I have lately seen) which, while as transparent as glass, are yet as tough and flexible as leather. Yet I feel pretty certain that the slight amount of extra trouble involved in the manipulation will prevent films coming into general use. However, I shall certainly use them instead of paper next year when traveling, if it be only that their transparency makes them so much quicker printers. A great professional printer tells me that his experience is that "the best paper negatives are inferior to the best glass negatives," taking a large number for comparison, and my own experience confirms this. So that glass for home-work and films when on the tramp will in future be preferred by TALBOT ARCHER.

A SIMPLE METHOD OF MAKING INSTANTANEOUS PORTRAITS AND OTHER PHOTOGRAPHS AT NIGHT.

BY HENRY G. PIFFARD, M.D.

[Read before the Society of Amateur Photographers of New York.]

PORTRAITURE by artificial light resolves itself into the employment of gas, kerosene, electricity, calcium or magnesium. With an abundance of either gas or kerosene quite satisfactory portraits may be made with an exposure of from one to three minutes, if care be taken in the arrangement of the lights, reflectors, etc. With the electric light exposure may be very much shortened, and portraiture by this means has already been placed on a commercial basis.

The calcium light is also capable of being used for portraiture, but the apparatus employed is bulky, expensive and troublesome, and the results obtained are not sufficiently satisfactory to bring this method into use. Exposure required by the calcium light is longer than in ordinary daylight gallery work.

The intensely actinic light yielded by burning magnesium has been utilized experimentally, but not commercially, and has generally been obtained by the ignition of a small length of magnesium tape, either suspended free or fed from a specially constructed lamp. It usually requires an exposure of fifteen or twenty seconds. This method is unsatisfactory, owing to the fact that the magnesium tape is apt to break and the light go out before the exposure is completed. Powdered magnesium dropped from a funnel upon a burning lamp or other source of heat has not been found in practice to yield the results that were hoped for.

Quite recently Dr. H. W. Vogel has communicated the results obtained by him with the use of a photographic powder prepared by Gädicke. By this means he obtained an instantaneous flash of extreme brilliancy and actinism, and capable of fully impressing the sensitive plate. In other words, he succeeded in making instantaneous portraits at night, a feat which had not been previously accomplished. The exact composition of Gädicke's powder is, we believe, unknown, except to the inventor, but is supposed to be a mixture of magnesium, chlorate of potash and sulphide of antimony.

Commenting on this mixture, the *British Journal of Photography* of August 26th says: "The statement that it cannot be inflamed by pressure or percussion is difficult to believe, since most dangerous explosions have taken place with such a composition. Of course the materials must be ground separately and mixed gently, but even then, no matter how far the chlorate of potash may be diluted down, so to speak, with the other two substances, the statement that the mixture is safe against pressure and percussion is too serious, as well as too improbable, to be safely accepted on the authority of an anonymous newspaper paragraph."

The efficiency of the Gädicke light may be easily conceded, and is sufficiently attested by the eminent Dr. Vogel, and the only drawback to its use appears to be the danger of premature explosion of the powder, a danger that will be fully appreciated by those who are familiar with the behavior of mixtures containing chlorate of potash.

Experiment has already shown that the light given out by the burning of ten or fifteen grains of magnesium is sufficient to fully expose a sensitive plate, and with the aid of a quick-acting portrait lens to yield a satisfactory negative so far as actinic effect is concerned.

In using magnesium tape, the ignition takes place gradually, and a time exposure is necessary. For instantaneous exposures it is requisite that the entire quantity of magnesium be ignited simultaneously, so that the full actinism of the light is developed in an instant. This Gädicke has accomplished, but by means which appear to be somewhat hazardous.

The problem that remained was to obtain a substance capable of instant combustion, and the heat from which would cause the simultaneous ignition of the magnesium, and which would be free from the dangers incident to the use of chlorate of potash. Such a substance is ordinary gunpowder.

If one part of gunpowder be mixed with three parts of magnesium powder and ignited in an open space, an extremely actinic light is instantly developed. This mixture is absolutely safe, as it cannot be ignited except by the application of fire, and will not explode by concussion.

Another simple method of accomplishing the same end is to take a small tuft of ordinary photographer's cotton, such as is used for making collodion, lay it on a metal plate, and strew over it a small quantity of magnesium powder. The cotton is then lighted with a match and the heat developed by its combustion ignites the magnesium and we have an instantaneous blaze sufficiently actinic to effect the desired result, as I will presently demonstrate.

It is not for portraits only that the method here described is applicable. Excellent copies of photographs or other objects can be made, and even enlargements on bromide paper.

In practice I have found that seven or eight grains of cotton, with from ten to fifteen grains of magnesium, will produce sufficient light for a single portrait or a small group. For copying, lantern slides, or even bromide enlargements, the same quantity may be used.

The methods here described are not the only ones by which the extremely actinic light of magnesium may be safely developed, as I have made several negatives by the flash of a pistol, the weapon being loaded with a mixture of gunpowder and magnesium.

In comparison with other methods of artificial illumination adapted to portraiture, this panactinic light, if I may be permitted so to call it, is characterized by extreme softness, a feature impossible to obtain with either a single electric or calcium light, or with the magnesium tape; due to the fact that with these latter the light emanates from a comparatively small point, while the magnesium-cotton light gives a large diffused blaze.

The prints which I exhibit this evening are from negatives which have been taken simply with a view to the demonstration of the actinic power of the light, and are to be judged from this and not from an artistic stand-point. It remains for the professional photographer, skilled in the use of screens, reflectors, and other accessories, and familiar with the art of posing, to obtain the best results that this means of illumination is capable of producing.

In conclusion I must extend my thanks to my friends Mr. Edward Leaming and Dr. P. M. Bradley for the kind assistance they have given me while experimenting with this process.

All communications for the columns of the Bulletin *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

The first of the contemplated monthly conversational meetings was called to order by *Vice-President* J. B. Gardner, in the Trustees' Room of the Institute on Wednesday evening, October 19th.

The Chairman remarked that the meetings would in future be held regularly on the evening of the third Wednesday of the month, due notice being given the members by the usual postal card. Mr. Gardner urged the members to invite their photographically inclined friends to participate in the future meetings, and said that the exercises would be informal and would give every one a chance to air their tid-bits of scientific possession, and to gather valuable hints for future elaboration and conversion into the coin of the realm. Mr. Gardner then formally announced the birth of the social infant and called for remarks.

Dr. Maurice N. Miller asked whether any one had experimented with hydrokinone as a developer for gelatino-bromide films.

Mr. Gardner said that he had just commenced a series of experiments, but at the present could only say that from his short experience he thought that hydrokinone was the coming developer. It was costly, to be sure, but could be used over and over; required no addition of bromide, etc.; and any desired density could be attained by simply continuing the action for a sufficient length of time. He had seen no evidence of fog, and the negatives were clean, clear and crisp.

Dr. L. H. Laudy asked for experiences in intensification of bromide plates. He had been making some experiments in line work when he required a short development and subsequent intensification, so as to avoid filling up of the lines. Carbutt first allows a saturated aqueous solution of bichloride of mercury to act on the film, and, after thoroughly washing, pours over the silver cyanide solution. Dr. Laudy found that by greatly increasing the cyanide he had obtained fine chocolate-brown negatives of good density At present he had not got far enough to give the exact quantities, and could only suggest that less cyanide should be used than would entirely redissolve the precipitate, but more must be used than Carbutt indicates. Just where to stop he hoped to be able to inform the members at the next meeting. He believed it would prove a valuable method.

Dr. H. G. Piffard's gun-cotton and powdered magnesium came in for a share of queries. The chairman said that he had obtained very remarkable and pleasing results by the ignition of about 15 grains of the powder sprinkled over the same amount of gun-cotton. A ground glass screen should be placed in front of the light, *i. e.*, between the light and the sitter. Not the slightest evidence could be seen of motion on the part of the sitter, even though attempts were made to dodge. The exposure seemed sufficient and development was complete in three minutes.

Mr. Thomas Faris introduced the subject of sunning silver negative baths, and believed that no effect, good or otherwise, would be had unless the solution were first neutralized.

Dr. Miller said he always kept his bath in the light when not in use; that when, on any occasion, he finished using the bath it was poured into a large bottle, and there it remained in diffused light until again wanted. He didn't have fog, indeed had almost forgotten what fog was. He ought perhaps to say that the amount of solution was much greater than was necessary to fill the bath, so that the stock bottle always retained a quart or more.

Mr. Oscar G. Mason said he did not depend upon sunning, and that he preferred to add water, filter, and strengthen, unless the bath contained a great deal of organic matter, when he adopted more radical measures. Mr. Laudy concurred with Mr. Mason in the water treatment, and believed that the precipitation of the iodides caused by the dilution carried down also more or less of the organic matter.

Mr. Faris showed some glass plates with the most exquisite and regular films of crystalline substances. He had not yet succeeded in securing certainty in the results in successive plates. Mr. Mason believed the process had a commercial value, and suggested using the films for printing.

Mr. Faris handed around some proofs from typographical process plates, a modification of the Meisenbach process. The prints equaled in delicacy and detail good steel engravings.

Dr. Miller said that he had a work in press the illustrations of which had been made from his own drawings by Mr. J. C. Moss' process; and remarked that, while the relief was not great, that the blocks were worked with great rapidity on steam presses, without filling up.

Mr. Mason remarked that only a few years ago the printers were so prejudiced against photo-engraved blocks that they wouldn't try to print them.

Mr. Faris said that was all changed now, and that very few wood engravings were being printed to-day compared with the process blocks.

Dr. Laudy said that the washed-out gelatine films gave better relief than most wood-cuts.

Dr. Miller and Dr. Laudy urged that the success and recognition of photo-engraving in America was due very largely to the efforts of Mr. Moss. That he had persevered, notwithstanding embarrassments which would have appalled any other man.

Mr. Gardner reminded Dr. Laudy that he had promised to show some of Koch's photo-micrographs at the next meeting. Dr. Laudy said he would also describe Koch's apparatus as it was now in the possession of Columbia College.

Several suggestions were made by the members as to a programme for the next social meeting. It was finally settled that it were best to make the session entirely informal and without any concerted plan of action. Each member could bring what he chose, and if the speeches were short, and to the point, every one could have a hearing and go away, as on this occasion, voting the matter a success.

[*From Photographisches Wochenblatt.*]

HARMONIOUS EFFECT IN LANDSCAPE NEGATIVES, AND THE PRINTING IN OF CLOUDS.

BY F. STOLZE.

The time draws near when the landscape photographer will unpack his negatives taken during the summer months to make prints from them. There was a period during the progress of photography that this was considered a purely mechanical labor, and the print was accepted as it happened to turn out. This is past long ago, and we know now that the print from a good landscape negative can be greatly improved by suitable covering, printing in of clouds, etc., and that by these means it is oftentimes even possible to obtain from only ordinary negatives more effective copies than are obtained without their aid from a good and first-class negative. The printer by this occupation will become an artist. He can produce pictures which otherwise would have been impossible, and it is therefore certainly justifiable to devote the greatest attention to this branch of photography. I will try to enter a little more into detail about this.

The first thing is the treatment of the sky in a good landscape, and there are two circumstances which make it particularly important. The first is that the photographer has seldom the time to wait for suitable or effective clouds in making landscape negatives. He has to be satisfied with the conditions as they are in taking the view, and would be at a great disadvantage compared with the artist if he was not enabled to equalize the defects in the printing process. But supposing that the sky was even suitable while taking the view, and that the negative was an exemplary good one, a great deal remains to be done yet by the printer if the effect of the picture is to be adequate to the original. The optical and photographic effect of the different colors is so deviating, that only very seldom or under particularly favorable conditions—as probably with orthochromatic plates—a result satisfactory to the eye may be obtained.

The question might be raised: Why is it that orthochromatic plates are not generally used for landscapes? Particularly after some really surprising views have been taken on plates made by Obernetter without a yellow glass, and demonstrating that the most excellent results can be obtained without prolongation of the time of exposure, and that these chromatic plates are even much more sensitive than the ordinary ones. Unfortunately (as proven in the course of time) the success with such highly sensitive plates is extremely uncertain. They were either subject to quick decomposition and would fog, or the high sensitiveness claimed for them was wanting, so that ordinary plates would surpass them in five to ten times their rapidity, or no trace of an orthochromatic action was to be found. These circumstances may sufficiently explain that the greatest number of landscape photographers still prefer to travel the old road, with certainty of their results, than in uncertain fields of operation. The possibility of working with less sensitive orthochromatic plates and with yellow glass of course remained. But an obstruction here was the prolongation of the time of exposure, making it impossible to take instantaneous views, thus removing the principal attraction to the artist. For the present it is therefore best to still rely upon the old plates, whose durability and easy manipulation in red and yellow light is always a particular recommendation to the landscape photographer.

To photograph clouds on such plates simultaneously with the landscape a much shorter exposure is required, as is well known. There are many arrangements for this purpose, consisting of flap, triangular, horizontal, or vertical shutters, all having the fault that the diminution of light for the same horizontal line is the same, and that therefore dark high objects of the foreground in the upper part of the picture will be greatly under-exposed. To correct this defect a flap consisting of removable strips has been tried, but the correct focusing of it is so difficult, and the action upon the sky so irregular, that it can hardly be recommended.

Objection might here be made that, strictly taken, the change from the highest light to the deepest shadows is only necessary for a correct photograph, and that if such a picture is obtained all requirements are met. This would be a grave mistake, to be punished by either the absence of the finest half-tones in the distance, or by darkening of the deep shadows in the foreground. While the latter, corresponding to the local tones, show a brownish and yellowish coloration, and photographically considered poor in light, the shadows in the distance, in fact the whole distance, will shine in a blue tone, acting almost like white upon ordinary plates. The latter can also be said—with a few rare exceptions—about the sky and its phases. Under all circumstances the exposure should be so that both kinds of light effects are considered as much as possible, and notwithstanding that remaining irregularities can be rectified in printing.

A very good method will therefore be to expose the sky short and the foreground longer in one of the above described methods, and to keep back the several parts belonging to the foreground which have become too dark, by retouching, toning and printing, the whole having an harmonious effect.

Notwithstanding all this, a good picture is only obtainable if sky and distance were favorable to delineation and illumination. If the shape of the clouds is a bad one; if they are distributed inharmoniously over the sky; or, as in some cases, the distance is set off in rather hard lines towards the sky, all these artificial means are of no avail in exposing, and, according to circumstances, one or the other process is required.

I will speak first about the case where the sky is not in harmony with the landscape. There may be different reasons for this; the clouds may not be handsome; they may be good, but unevenly distributed; or good, but not suitable for the landscape. The latter case particularly requires explanation.

It is known how handsome in effect heavy clouds in manifold groupings will have in a marine view, particularly if the sun is behind such clouds, lighting up their edges, while each wave reflects the light of the sky. If these clouds and the same light effects are placed in the narrow space of a Highland picture with mountains, the clouds in front of the sun will envelop the foreground in shadows. The mountain sides are hardly lit even with a cloudless sky, and while in the marine view we have nothing but light and illuminations, the effect is here an opposite one and sky and landscape are in strong contrast. While the rich cloud formations represent, so to speak, the most attractive part of the picture above the smooth surface of the sea, they will become almost valueless in Highland scenery with large mountains, although they may appear as a principal part of the picture, on account of their illumination. This demonstrates the general rule, that a richly clouded sky with high light effects (as, for instance, moonlight scenery) is always most effective in an open landscape, and that in a closed landscape (with mountains) it may be detrimental to the general effect of the picture. The result of these observations would prove that landscapes without much elevation, or sea views, should only be taken with suitable clouds; or, if such an opportunity is not offered, that suitable clouds be printed in. In mountain scenery, on the contrary, it would be best to avoid too much cloud contrasts, and to make use only of such clouds as may harmonize with the scenery. It is impossible to go into all the details, and it will be sufficient to have drawn attention to ruling principles, by whose correct observation in each separate case one is enabled to acquire good and proper taste.

(*To be continued.*)

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A BRONZE statue of Longfellow is soon to be erected in Portland, Me., the city of his birth.

THE GALLIC ACID AND SILVER NITRATE INTENSIFIER—HYDROKINONE AS AN INTENSIFIER.

BY JOHN G. CASSEBAUM.

[Read before the Photographic Society of Philadelphia.]

The best method of obtaining the proper density in a gelatine negative is undoubtedly proper exposure and development.

But even the best manipulators will sometimes be deceived in the printing qualities of a negative, and I believe most all who have used the wet plate process have often longed for some intensifier like the old iron and silver, or pyro and silver, and no doubt many have tried to intensify gelatine negatives by the same method, but encountered the disagreeable foe, red stain, and abandoned its use.

Now I feel convinced from a number of experiments made, that iron, pyro or gallic acid and silver can be used without any danger of staining if the film is thoroughly washed and rendered slightly acid before attempting intensification.

If the plate is bathed in the iron and acid, pyro and acid, or gallic acid and acid solution for a few minutes, and the solution then poured back into the graduate and the silver added and flowed back over the film, there will be very little danger of staining.

Nitric, acetic or citric acid can be used with either of the above reducing agents.

By this method a negative can be strengthened before fixing as well as after. In the first place the plate should be well freed from the developing solution, in the latter case thoroughly washed to remove all traces of hypo.

To intensify a negative before fixing can only be necessary when handling plates extremely poor in silver, as otherwise the desirable strength can be obtained in the development.

Now to come to the gallic acid and silver intensifying process published by Mr. Bartlett and Dr. Wallace, I must say that after many experiments in this direction I have adopted the same, as it has proven the best of all in my hands.

By using the preliminary bath of

Perchloride of iron	4 grains.
Chrome alum	2 "
Citric acid	4 "
Water	1 ounce.

we have at once a clearer, an acidifier, and a destroyer of the last traces of hypo.

The perchloride of iron (Mr. Bartlett's suggestion) has been added mainly for the last object, and also to improve the resulting color of the negative.

In ordinary temperature double the amount of citric acid can be used and the alum dispensed with.

In extreme warm weather, and when dealing with plates inclined to frill or soften, it is best to pass them through an alum bath and dry them before subjecting to this process. Attention should be paid not to carry the intensification too far, as the negative will gain intensity on drying.

The negative should not remain too long in the preliminary bath so as to allow it to bleach, unless handling a negative slightly fogged or over-developed, in which case it is advisable to permit the plate to slightly bleach. The dish containing the solution should be gently rocked to prevent a net marking, which otherwise is apt to occur.

After taking the negative out of this bath, it should be well washed for several minutes under the tap, and the gallic acid and silver, as per formula, flowed over it:

A

Gallic acid	80 grains
Alcohol	1 ounce

B

Nitrate of silver	40 grains
Water	1 ounce

One dram of each to 2 to 3 ounces of water.

When the negative has been allowed to bleach, intensification will have to be carried further, as the underlying image has been converted into a chloride of silver, and consequently would dissolve in the subsequent hypo solution. By carrying the intensification just to the right point, the negative after leaving the hypo will prove free of fog, and have brilliant lights and clear shadows.

Sometimes it will prove advantageous to flow the negative, when taken out of the fixing bath, with the clearing solution. It is needless to say that the plates should be well washed.

Recently I have made a few experiments with hydrokinone in place of gallic acid :

Hydrokinone	60 grains
Nitric acid	2 drops
Water	6 ounces

Half an ounce of this diluted with 2 ounces of water and 1 dram of silver solution added. Plate also previously acidified.

The action of this intensifier is somewhat slower, but the resulting color of the negative is a rich black in the opaque parts, and even a plate, pyro stained to the color of a lemon, was converted into one of a rich gray after subjection to this intensifier. I believe hydrokinone and silver will prove an excellent intensifier and toner for window transparencies.

[*From American Journal of Science.*]

IDENTITY OF THE PHOTOSALTS OF SILVER WITH THE MATERIAL OF THE LATENT PHOTOGRAPHIC IMAGE:

BY M. CAREY LEA, PHILADELPHIA.

(*Continued.*)

II.

THE two impressions, that formed by light and that by hypophosphite, are similarly affected by reagents.

As an example of this identity of effect produced on the two impressions, I first take the action of nitric acid.

Chloride, bromide, and iodide papers were exposed to moderate diffused light, under a screen with openings, for a proper time to form a latent image; the chloride and bromide for four or five seconds, the iodide for twenty or twenty-five. They were then cut into halves, and one half of each was soaked in strong nitric acid for five minutes. These halves were then washed for some hours, and were developed along with the halves not so treated. Result was, latent image on silver chloride almost, if not quite, uninjured; on silver bromide, somewhat affected, but still strong; on silver iodide, entirely destroyed.

Similar portions of the same papers were then marked with hypophosphite, and were cut into halves, and one half was subjected to the action of nitric acid in exactly the same way as the previous. The result was exactly as before. The hypophosphite marks on the half of the chloride paper that had been treated with acid came out in development as vigorously as on the half that had not been treated. The bromide paper showed the marks weakened by the acid, but still strong; on the iodide not a trace appeared. In all respects the result was the same; what the one resisted, the other resisted; what destroyed the one, destroyed the other.

Another confirmation is presented by the action of the alkaline haloids upon the latent image.

The latent images produced by light on chloride, bromide, and iodide of silver were all treated with cold and moderately strong solutions of potassic chloride, bromide, and iodide for half-an-hour, and were then subjected to development. It was found that all three silver salts bore the action of potassic chloride and bromide fairly well; the images were somewhat weakened, but strong developments were obtained without difficulty. But when potassic iodide was applied the latent image was totally destroyed.

The visible effect of the alkaline haloids on the photosalts exactly corresponds with their action on the latent image. Potassic chloride and bromide, applied in moderately strong solution and cold, have little effect, but potassic iodide quickly destroys them.

Therefore the action as well of nitric acid as of K Cl, K Br, and K I is exactly the same on the latent image impressed by light on AgCl, AgBr, and AgI, as it is on the corresponding photosalts.

III.

The impressions produced by alkaline hypophosphite upon silver chloride always give rise to direct images darker than the ground on which they are formed. The same substance produces an impression on silver bromide which may, by development, produce either a direct or reverse image; so that there is perfect parallelism with the action of light.

The reverse action of light, sometimes called solarization, shows itself as follows: A film of bromide being exposed to light, part covered by an opaque screen, the exposed portion receives an impression capable of development, and this impression grows in strength to a certain point, then recedes and reaches a condition in which it is less susceptible of development than before exposure. All bromide films, even unexposed to light, will darken in a developing solution in time. The portion that under the action of light has reached the reverse stage resists the reducing action of the developer better than that which was not exposed at all, and consequently appears after development as light on a dark ground, and is therefore a reverse image. As to the cause of this action we are as yet wholly in the dark. If the continued effect of light was simply to restore the affected part to its original state, we might attempt an explanation by affirming that the continued action of light undid its own work. But the fact of the resistance to reduction being greater than before exposure, shows that some as yet unknown action of light is brought into play. The reverse action cannot be due to oxidation as has been suggested, because hypophosphite reverses, and certainly cannot oxidize.

The reversing action of light on silver bromide finds its counterpart in the action of sodium hypophosphite.

If we take bromide paper (it is immaterial whether in making it the bromide or silver solution be applied first, but for these experiments on the reversal of the image it is essential that a pure neutral silver solution be employed, and that after the second solution has been applied the paper should be thoroughly washed, all the operations being, of course, performed by inactive light) and make marks on it with a strong solution of hypophosphite, and then throw it into potassio-ferrous oxalate, we shall get a direct development; the marks will be stronger than the ground.

If now we continually weaken the hypophosphite solution, we shall presently reach a point at which these marks are, in development, indistinguishable from the ground on which they were made; but, continuing the dilution still further, we presently reach a point at which the marks reappear, but this time reversely, as lighter marks on a darker ground. This result is obtained with about a two per cent. solution; the first-mentioned effect comes with a solution of 25 or 30 per cent., so that, according as we use the hypophosphite solution stronger or weaker, we obtain exactly opposite effects. Here the parallelism is striking, but not perfect; at least it remains to be explained why the action in the two cases proceeds in a reverse order. All the other reactions show a perfect identity.

Time will also sometimes produce the same effect as dilution. Paper marked and put away for twenty-four or forty-eight hours, giving at first a direct image, may, after that time, give a reverse one. This effect is extremely uncertain, and I think, exceptional. I have kept very many pieces for periods from a few hours to several weeks, which first and last gave direct images only. A few became reversed; but the experiment itself, the opposite effect of strong and weak solutions, is liable to no such uncertainty.

Again, we make light and hypophosphite interact, and each reverse the other's action. To make hypophosphite reverse the action of light, I take a piece of silver bromide paper, expose it to the action of diffused daylight for a few seconds, then, taking it to the dark room, make marks upon it with a glass rod dipped in solution of hypophosphite. On developing with potassio-ferrous oxalate the marks appear lighter than the ground. Or, what is perhaps more striking, we take two pieces of such paper, retain one in the dark room, and expose the other from five to twenty seconds to diffused light, then make marks on both with a glass rod dipped in strong solution of hypophosphite, and then, after allowing a few minutes for the hypophosphite to act, place them both in a solution of potassio-ferrous oxalate. The marks will develop, in the one case, as dark on a light ground, in the other (that exposed to daylight) as light on a dark ground.

We have here made the hypophosphite imitate the action of light; it has reversed the image in the same way as would result from a prolonged exposure to light. It will next be shown that light may be made to imitate the action of hypophosphite, and reverse the effect already produced by that or other reducing agents.

If we take the red or purple silver bromide, preparing it with exclusion of light, and the same precaution as in the case of a dry plate, and extend it over paper (it is best, though not essential, to mix it with a little gelatine to enable it to retain its hold on the paper in the subsequent treatment), dry it, and expose it to light under a screen, such as a piece of opaque stiff paste-board with openings cut in it, and then apply potassio-ferrous oxalate, we shall obtain a very remarkable effect. All the parts exposed to light take a reverse development, and appear as lighter spaces on a dark ground. And this goes so far that we may expose till we get a visible and quite strong image, darker than the ground; and yet in development this darker portion will come out lighter than the ground. Indeed I have one specimen which shows almost white figures on an intensely black ground. Before development these light figures were brown, by exposure to light, on a rose-purple ground. I have seen few more curious results than this.

From the foregoing it follows that red bromide, notwithstanding its intense coloration, is in the same condition respecting light as normal silver bromide that has received an impression of light so strong that any further influence of light would cause reverse action, only that a vastly larger proportion of its molecules are affected. In the case of the latent image formed by light on normal bromide, it would seem that the particles affected, although numerous enough to serve as a basis of development, are still too few and too scattered to be visible or affect the color. The photo-bromide, on the contrary, has its mass made up of them. Then, if exposed to light, the light carries them a stage further—brings them to the reverse or "solarized" condition—and the parts affected by light develop less strongly than those not exposed.

So light can act the part of hypophosphite, and hypophosphite that of light, interchangeably; each can produce a direct action, each a reverse, and each can reverse the other.

It then appears that in all the numerous ways in which it is possible to compare the photosalts with the material of the latent image, they are found to be identical. The proofs based on development generally, and especially on the reversal of the latent image, seem very strong, and these receive additional support from the exact identity of reactions shown by the photosalts, and by the material of the latent image.

The question of identity of the photosalts with the products of light on the silver haloids might, perhaps, be left with some confidence to the cumulative proofs here offered. But I hope to be prepared to give, in the next number of this journal, additional evidence from a new direction.

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THE *Century* for the current month has another interesting illustrated article on "Composite Photography."

[*From N. Y. Tribune.*]

PHOTOGRAPHY IN NATURAL COLORS.

BY GEORGE G. ROCKWOOD.

It has been announced of late that parties in London had discovered the art of reproducing and retaining by photography the colors of nature. Surely nothing in an artistic way could have been more interesting or valuable.

Important as was the invention of the daguerrotype and the subsequent development of the art-science photography, there has always been a desire to see the exquisite tints which we see in nature, and have in miniature upon the ground glass of the camera, reproduced in some tangible and permanent form. Niépce de St. Victor and other French scientists have obtained upon the daguerreotype plate some of the colors of foliage, a red brick house, etc., but the range of color was limited and the pictures could only be seen in a feeble, non-actinic light, soon fading from view. This was accomplished some twenty years ago, since which time no material advance has been made in this direction. So far as the art of photography as now practiced is concerned, I have no expectation that the development of color will be attained direct from nature.

Light, as is well known, has three distinct qualities: illumination, heat, and actinism. The latter is the chemlcal ray and is that which affects the sensitive plate. A beautiful, though somewhat intangible theory obtains, that inasmuch as it is this actinic or chemical quality in light which imparts all color to nature, and without which all vegetation bleaches and becomes white, and dies, so we have a right to hope that it will also so affect the photographic plate as to give us the beautiful tints of the rainbow.

But, unfortunately, color has value to the photographic plate only as it reflects the rays of light. Some colors, red, yellow, dark green, black (if it is a color), reflect so feebly the chemical properties of the light as to fail to decompose or reduce the film on the sensitive plate. Photography is based upon the principle that certain salts of silver are decomposed by the action of light. Just in proportion as the film receives the light reflected from the object, so is the deposit of the silver compound upon the plate. Simply putting it, a white collar perfectly reflects the light; the black coat reflects but little and hence a slight action to the plate and a thin deposit. Blue, violet, and their combinations with white strongly reflect the actinic ray; red, yellow, and their modifications do so but feebly. So color has but little effect on the present basis of photography in the way of repeating itself.

In view of the wonderful things that have been given to the world in the line of invention during the last half century, I would be a rash man to say that the reproduction of colors is impossible. I think, however, that when it comes to us, it will be through the discovery of some entirely new basis or principle in photography; some color-sensitive compound entirely away from the present fundamental basis, the salts of silver.

Now concerning the alleged discovery by an eminent photographer in London. I was prompt to visit him upon my arrival in London the past summer, and was, I confess, surprised at the results exhibited as the outcome of "twelve years of study, experiment, and chemical research." The awful nomenclature adopted by the artist both in his verbal and written comments would impress one with the belief that something novel, to say the least, would be forthcoming. Introducing myself as connected with the *Art Amateur* and giving no intimation of my occupation as a photographer, I was led into the dimly lighted apartments where the pictures were to be seen. Here were a few indifferent hand-colored photographs, such as are done (the coloring) for twenty-five to fifty cents in most establishments. After coloring they had evidently been as we term it, "glacéd" or given a fine finish by being laid down upon glass with hot gelatine and then when cold stripped off; the precise thing which the fraternity in America discarded a long time ago, owing to the instability of the aniline colors, or as this inventor designated them " the hydro-carbons." Noticing duplicate pictures of the same subject, I innocently remarked that "it must be arduous to a subject to be obliged to sit for each picture as one must do, I suppose to get the natural colors." Here followed a cyclone of big words—a few of which my early experience as a reporter and his circulars enabled me to secure. Placing his hand impressively upon me he said: "The color rays affect the negative plate in a latent manner, so that they may be made manifest afterwards, when a proper medium for their appearance, either selective or otherwise is provided." * * "Therefore the positive plate (which is paper) being prepared, these vibrations of color, stopped off and stored up in the negative film, are allowed to become active on the positive film when the exposure again to light (under the negative) takes place!" * * "At this point the positive, in conformity to the general idea running through the whole process like a beautiful thread of exactitude, takes up the rates of vibration and the qualities of the vibrations of the negative in a complementary manner, and gives to the positive plate all the characteristics of molecular condition (including latent color vibrations) that it would have had without the intervention of a negative. It is the true idea of the conservation of energy; it causes the already vibrating molecules to take up and swing in some complicated manner with those particularly absorbed rays!" and so on to the verge of lunacy.

If we could reduce the above to simple text, our friend claims that he stores up color vibrations as one would electricity, and the negative thus loaded, fires off color when used to print from. The sitter I took to him had a rich complexion and was dressed in crimson velvet waist and suitable accompanying colors. Whether the negative forgot to do its work, or the color had leaked out, I do not know, but the "proof" was precisely what I would expect from the subject if photographed in the ordinary manner, although assured that "the greatest opportunity had been given for the various interactions, actinic, photochromatic and selective to offset themselves according to the original vibrations (color or otherwise) to which the beautiful sitter was subjected during the sitting!" I retired to think it over.

I fear that "Photography in Natural Colors" is not yet at our command—from this source.

HOME PORTRAITURE.

BY T. N. ARMSTRONG.

[Read before the British Photographic Convention at Glasgow.]

(*Continued.*)

These hints might be greatly elaborated, but the intelligent beginner will place his camera before the sitter and multiply these illustrations to any extent. The main thing to thoroughly understand is, that in every modification and turn of position these relations of the eyes to the face will express something, and if not controlled to express what is desired may give an expression quite undesirable.

Having briefly glanced at lighting, posing, and expression, let me next say something about the needful apparatus. A beginner will very likely attempt this class of work with his ordinary landscape camera and symmetrical lens, with the result that somehow or other they do not produce pictures that can at all compare with professional work, and very likely they will throw it up in disgust. Experience has taught me that home portraiture requires close study and the employment of accessories which, in nine cases out of ten, an amateur does not possess. First, as to the camera. If you are going to confine yourself to simple heads relieved on a white background, like some of the examples I have brought with me to-night, your ordinary landscape camera will suffice; but if you aim at more pretentious work, then a studio camera with its side and top and bottom screws is a necessity so as to get the sensitive plate on the same plane as the sitter. Then, again, the camera stand. Very few amateurs are possessed of other than an ordinary tripod, which is no use for indoor portraiture. A good, steady, firm stand, capable of raising and lowering the camera rapidly is another necessity.

Then as to the lens. I find a very prevalent opinion exists that any sort of a lens will do. Some one has said, I forget who, that any hammer will drive a nail, and any lens will take a picture; but no lens will do all classes of work any more than one hammer will. In portraiture a good portraiture combination is a *sine quâ non.*

Another matter which may seem of small importance to many is the cap of the lens not fitting properly. When I say not fitting properly I do not mean too loosely on the hood, but just the right thing; if too tightly vibration is likely to ensue when removing it. Even such little matters as these are of importance. I know from experience how necessary it is to guard against such, for when I acquired a high-priced portrait combination from one of our best English makers, the cap fitted so tightly that it was impossible to remove it without shaking the camera, and many a plate I spoiled through it. The sitter was blamed of course.

Head rests I never use. I have one, but it is a nuisance. When I get a sitter who cannot keep steady for a few seconds, I adopt some pose whereby a natural rest comes into play.

Get a good background by all means. I prefer what is called empire cloth stretched on a frame, one side light for vignetted heads, the other side a dark slate color, and on the top I have two rods nailed, which can carry curtains at either side. I find these curtains very handy, so they can be used or not at will.

Hitherto I have said nothing about development; this, at first, will give a beginner some trouble. The chief point is to obtain proper density. Your negatives must not be too thin nor yet too dense, but just the right thing. It would never do to develop a white satin dress with as much pyro as a dark glen. Experience soon teaches a thoughtful operator. I would strongly recommend beginners to stick to one brand of plates, and let these be as rapid as possible, then practice will teach you how to mix your developer so as to get proper printing vigor in your negatives. I never intensify. Should you happen to over-expose and so get your plate too thin, I know of no better way of gaining density than that recommended by the Paget Company, I mean their citrate of ammonia formula. By its use, when all detail is out, development is stopped, but the image already formed is allowed to grow stronger.

And now I come to that much maligned operation of retouching. I do not care what may be the opinion of those opposed to the use of the pencil, I fearlessly assert that retouching is the professional sheet-anchor in this branch of photography, and I should like to see the studio that could be conducted without its staff of retouchers. Until I took lessons and became proficient in retouching, I was quite cognizant, and so were my friends, that any attempts at portraiture were miserable failures; the moment I understood how to retouch and model my negatives, that moment I felt I had entered into a new sphere in photography, and then I saw for the first time I had mastered portraiture.

Not only do I advocate retouching, but I recommend the use of every dodge under the sun to improve not only the negative, but also the appearance of the sitter when going to be photographed. I remember once being told by an amateur who had a very exalted idea of his own art culture, on looking at one of my pictures—it was that of a lady friend who had a very pretty face—after examining it and confessing it was very nice, but retouched to death he thought.

"Do you think so?" I replied.

"Yes," he answered. "You retouch too much, Armstrong, I think." Thereupon I went to my cupboard and produced the negative. "Show me the retouching." He stood amazed and confessed he would not have believed it. I told him he had something to learn yet.

In this case I had taken the liberty of freely using the puff and powder-pot, of doing up the eyes and eyebrows, even going so far as to paint the lips quite in the professional beauty style; and who shall say my picture was not like the original when she sat down? I often hear it argued that retouching kills the likeness and spoils the texture of the picture; all I can say is, a good retoucher will do nothing of the kind, but, on the contrary, will remove those imperfections in the negative which is necessary to the yielding of a pleasing and faithful likeness.

I am not here to-night to tell my amateur friends how to retouch, but merely to say that it is my humble, but honest, opinion to be an absolute necessity if you care to turn out pictures which are to be acceptable to your friends and a credit to yourself. Not only do I advocate retouching, but I go further, and say, adopt every means, such as the employment of ground glass varnish, mineral paper, etc., for the improvement of your negatives, and leave no stone unturned to produce results that are pleasing and life-like.

Lastly, as to finishing and mounting. Exercise your own taste in this respect; if you have a leaning to and are fond of enameled pictures, enamel by all means. Very likely the most of your friends will say how beautifully finished, while on the other hand you will occasionally meet with some kind friend who will consider your labor in vain, likening your enamel to his patent leather boots. Taste differs in this respect, and perhaps it is well it is so. I prefer to mount my pictures in optical contact with glass, and to inclose them in the good old cases which were all the rage in the grand old collodion days. We seldom see these cases now; but I have brought a few of them with me to-night just for "auld lang syne." Then again there are the metal rims, another very nice way of finishing a picture. These rims are not expensive, and if it is desired to hang up a picture they are the very thing. To an amateur they have their advantages, for when presenting your friend with his picture, as a rule, he has not the cheek to ask for a dozen, as is often the case when mounted on cards. You can with truth say I do not mount on cards, but if you want a dozen or so, here's the negative, get a professional printer to print them.

The mounting of the prints in optical contact is very easily done, if gone about properly. In 1886 the editor of the *British Journal of Photography* asked me to contribute something to his yearly Almanac, and I sent him a short article on Optical Contact, which you will find on page 118 for that year. If you follow out the instructions I give, you will find it an easy matter to mount your prints in optical contact.

And now I have finished my task. Much more could be written about this fascinating branch of photography, but I have already exceeded the time allowed. I have told you plainly what little I know and what I believe to be necessary to success. If what I have communicated should in the smallest degree be the means of assisting any of my amateur friends to overcome their difficulties, I shall be satisfied, while, on the other hand, if you deem me a bore, give me a back seat at next convention.

ANOTHER MAGNESIUM MIXTURE.

To the Editors of the BULLETIN.

I WOULD like to suggest a change in the formula for the flashing magnesium powder mentioned by your correspondent in Germany. The sulphide of antimony gives off offensive and, I imagine, noxious fumes if inhaled in any quantity. I have found that the following formula furnishes a light by which instantaneous portraits, groups and interiors may be taken successfully.

Chlorate of potash	2 parts.
Sugar	1 part.
Magnesium powder	1 "

This is of course also a percussion powder and must be handled with care.

I am, yours truly, THOS. W. HARVEY.

* * *

HOTEL ETIQUETTE.—A Montana hotel has this notice: "Guests who insist on riding their horses up to their rooms will be charged extra."—*Chicago Tribune.*

TO WHOM DOES THE NEGATIVE BELONG?

To the Editors of the BULLETIN.

I RESPECTFULLY beg to submit to you the following question, which you will kindly take into due consideration and answer through your notes and queries column.

Who is the rightful owner of a negative? Is it the owner of the studio; the customer, who pays for his photograph; or the operator?

This question has been the subject of many a discussion, as well in Europe as also on this side of the Atlantic, and many apparently just and right answers have been given. However there has been a lawsuit in Trieste, Austria, where the operator pretended that he, as the author of the image on the glass plate, was also the owner of it; and as far as I remember the decision of the court was in his favor, contrary to the general expectations. Here in New York, we have had the LaFarge lawsuit, where Mr. LaFarge, being in the employ of the company which bore his name, refused to give up certain photographs of nude women, and claimed said photos, sketches, etc., as his personal property.

The general and predominant opinion seems to be that the negative belongs to the owner of the studio or employer of the artist who takes (and makes the negative), and who pays his operator for these services. The decision of the court of Trieste meanwhile pronounced that the camera, studio, plates, etc., were nothing but the means to arrive at the production of the image (or negative), and that the person who made it, being the author, unquestionably must be considered the natural owner.

Please be kind enough to enlighten me on this question, which, as far as I understand, has caused many a discussion lately in England and Europe.

Respectfully yours, MAX BOELTE.

[We should very much like to hear the opinions of some of our readers upon this very important question.—EDS.]

* * *

From British Journal of Photography.

PLATES FOR HOT CLIMATES.

PERHAPS the following remarks on the behavior of dry plates in Calcutta may be of use to some of your readers.

During our cold season (or, say, from the middle of November to the middle of March) I have obtained very satisfactory results from all the well known makes of plates which I have tried; but it is when our hot and rainy seasons are on us that working dry plates becomes a real difficulty. Slow plates I soon found to be practically useless during the two latter seasons, as when they did not turn into "dissolving views" in the developer, they invariably did so in the after-washing process, even when ice was used. If perchance they escaped in the washing, the drying process resulted in the complete dissolution of the film.

The extra rapid and instantaneous plates were far better, as the films had much less tendency to melt than those of the slow plates, and good results might often be obtained with care, patience, ice and alum. There was still, however, a great inclination to frilling, particularly in the final washing and drying processes.

For the last few years I have, however, been using Tropical or insoluble plates, and these are, without exception, the finest plates I have ever used. Frilling or melting films never occur with them, and they stand an immense amount of rough handling and development. They are very easy to control, and yield negatives of any required density. No ice is required for them, and the alum bath is only necessary when the plate requires clearing. I have left these plates soaking in the same water for three days in the months of May, June, July, August and September—not once, but frequently. I have then taken them out, wiped the water off the film with the back of my hand, then dried them both in the sun and over a kerosene lamp, and had them in the printing frame in perhaps a quarter of an hour after taking them out of the water. I use the simple pyro and ammonia developer, which I prefer to all the others I have ever tried.

I am, yours, etc., JOHN J. MEADE.

4 HASTINGS STREET, CALCUTTA, September 19, 1887.

[The plates alluded to by our correspondent are an American production.—EDS.]

OBITUARY.

GUSTAVE ROBERT KIRCHHOFF.

THIS eminent German scientist passed from this life on October 17th last. He was born at Kœnigsberg in 1824, and studied medicine in the university there. Thence he went to Berlin, where he practiced his profession until the year 1850, when he was appointed Professor of Physics at the University of Breslau. In 1854 he was called to the chair of Physics at the University of Heidelberg, and in 1875 he was appointed to the Professorship of Physics at Berlin, and at the same time elected a member of the Academy of Sciences.

His name is known all over the world for his memorable researches in spectrum analysis in connection with Professor Bunsen. It was in 1859 that he made the wonderful discoveries in spectrum analysis by which the light of an incandescent gas reveals the composition of it. This opened a new era in astronomical work, since every star is made to tell us the character of the substance that produces the light by which it shines. Kirchhoff's work in this field of labor was published in 1866, in Berlin, under the title "Studies of the Solar Spectrum and the Spectra of Simple Bodies," and is a monument to his clear-sighted intellect and patient research.

During some years his health has not been good, but the end came rather unexpectedly. Sixty-four years of such a life adds much to the stock of human knowledge, and the work of that busy brain will live as long as astronomy is studied.

ROBERT HUNT.

Having just entered upon his eighty-first year, Mr. Robert Hunt, F.R.S., has passed away from amongst us.

Hunt's Researches on Light, published in 1844, when he was Secretary of the Royal Cornwall Polytechnic Institution, gave a powerful stimulus to the then incipient art of photography. We are well aware that it proved the means of many scientific men entering this field of research. Having passed into a second edition it then assumed the phase of Hunt's Photography, and formed one of the volumes of the Encyclopædia Metropolitana. For a long time, and in one or other of the several editions through which it passed, it was the hand-book of the art most sought after, being especially valued on account of the historical matter in which it abounded.

Mr. Hunt, in 1850, compiled with much care a general summary of the history of photography for the British Association, given in a tabulated form. From this we learn that he himself was an assiduous expermentalist during the years 1842, 1843, and 1844, in the last of which he discovered the developing powers of protosulphate of iron, which afterwards became, especially for wet collodion, such a power in the hands of working photographers. His labors embraced researches (for photographic purposes) in the salts of chromium, nickel, lead, manganese, copper, iron, mercury, platinum, gold, and silver.

He was one of the founders of the Photographic Society in 1853, and was a member of its first council, and at its second meeting contributed a paper "On the Principles upon which the Construction of Photographic Lenses should be Regulated." He was the author of several works bearing on science; he contributed to several scientific periodicals; and as a lecturer was singularly attractive.

In his later years Mr. Hunt was Professor of Mechanical Science in the Government School of Mines, and up to the time of his death was Keeper of the Mining Records at the Museum of Practical Geology. For many years he has not mixed in photographic circles, nor taken any special interest in the art once so well loved by him.

He died on October 17th.

[We are indebted to the *British Journal of Photography* for the above account of the death of one of the most noted workers in the early days of photography, and would add our tribute to the memory of a painstaking, earnest student of photographic science. At a good old age he has passed to rest, leaving us better for his life's work and grateful that he has been amongst us.—EDS.]

OUR ILLUSTRATION.

THE pictnre that we give as a frontispiece in this issue of the BULLETIN is a remarkable example of quick work in the developmen of a new and interesting process. It is scarcely a month ago since Dr. Piffard brought before the Society of Amateur Photographers his new and ingenious application of the magnesium light. Mr. George G. Rockwood was present at the meeting and at once saw the utility of the new method of illumination. After some experiments he soon overcame some of the difficulties of the process, and at our request kindly consented to furnish us with illustrations for the BULLETIN. When we take into consideration the weather we have had since the negatives were made and the large number of prints necessary to supply our ever-increasing mail list, we must congratulate Mr. Rockwood upon his success and enterprise. We must also express our great satisfaction at the excellent results obtained with this new process. The examples given are remarkably good pictures and surpass anything hitherto obtained with magnesium light.

◆

WHEN an Englishman travels on the Continent he relies entirely on his guidebook for information. He regards his Baideker as absolutely infallible.

A couple of traveling Britons were observed to be studying, Baideker in hand, a landscape on the Rhine. One of them said, reading from the book :

"A tall tower is to be seen on the right of the ruins of the old castle."

"But, 'Arry, me boy, there is no tower there."

"That's so, by Jove ; the landscape must be wrong."—*Texas Siftings.*

ANTHONY'S

Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE BOSTON CAMERA CLUB.

THE Club held its regular meeting at the club room, 50 Bromfield street, on the 3d inst. After the transaction of routine business and the election of four new members, the lantern was lighted and a number of slides designed for the "Interchange" were shown and criticised.

Upon the walls had been hung a number of bromide prints, both contact and enlargements, principally the work of Messrs. Philbrick and Sweet, which were much enjoyed by those present.

* * *

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, OCTOBER 11, 1887.

President D. H. WALKER occupied the chair, and said: As the minutes of the last meeting will be printed and circulated among the members for their information, there is therefore no need of reading them at this time, no objections being made to the omission.

I have in my hand a letter from William K. Burton, Esq., of Tokio, Japan, the reading of which will explain itself.

IMPERIAL UNIVERSITY,
TOKIO, JAPAN,
September 1, 1887.

DEAR SIR,—I have to acknowledge receipt of your letter dated June 25, 1887, intimating that the Society of Amateur Photographers of New York have done me the honor to elect me an Honorary Member of that society.

Kindly express to them the sincere pleasure that this act of kindness on their part affords me. It increases the already very affectionate remembrance that I have of New York; or, more strictly speaking, of the people of New York. Yours very truly,

W. K. BURTON.

I have a letter from Mr. F. C Beach and will read that also.

361 BROADWAY, NEW YORK,
October 11, 1887.

DEXTER H. WALKER, *President*.

DEAR SIR,—I take pleasure in presenting to the society a framed 8 x 10 photograph of the group of diplomas awarded to members of the society on April 1st last at the annual exhibition.

The negative was made upon the new special plate manufactured by the George H. Ripley Company for copying, line work, engravings, etc., and was developed with pyro and potash. Yours respectfully,

F. C. BEACH.

Dr. PIFFARD—I move that the communications be received and placed on file, and the thanks of the society be given Mr. Beach.

Motion carried.

The *President*—I do not know of any other communications which would be of any interest to you.

Members will please take notice that the last Wednesday in each month will be exclusively devoted to the exhibition of lantern slides; and in order to secure a good selection of interesting slides and subjects, the Saturday evening preceding each exhibition will be given to testing such slides as may be produced by members or others. On these test occasions it will be the pleasure of the Lantern Slide Committee to run through the lantern any slide which may be brought here for that purpose, whether for eventual exhibition or not.

At the request of Mr. Richard H. Lawrence, Chairman of the Lantern Slide Committee, there is another thing I wish to bring to your attention. It is of the "Slide interchange."

For two years past the chief amateur photographic societies have formed an interchange, the object of which is to loan each other slides and thus secure a new set for exhibition each month.

The plans of the interchange are briefly as follows. Each society contributes a set of one hundred slides, the work of its members. The sets must be ready by November 1st, when a route will be laid out, and the slides are sent from one society to the other till all have been exhibited before the contributing societies. They will then be returned to their owners.

The following societies will probably join: Baltimore, Boston, Chicago, Cincinnati, New York, Philadelphia, Pittsburgh, and St. Louis

Our society has only a short time in which to prepare its lot of one hundred slides. Members are earnestly requested to contribute any number, from one to twenty. The selection will be made on Saturday evening, October 22d. The set selected will be exhibited before the society on October 26th, and on November 1st they will be started on their rounds.

The following gentlemen have been elected to membership since our last meeting. Active: Dr. E. P. Fowler, D. H. Nesbitt, H. T. Duffield, Dr. D. H. Goodwillie, Henry L. Brevoort, C. Smith Lee, Herbert M. Baldwin, Dr. E. F. Brush, Hon. John Boyd Thatcher. Corresponding: H. A. Waldron.

Thinking it may be of interest to you, I wish to call your attention to the use of hydrokinone as a developer.

It has been used with great satisfaction by some of our members, and with the best results.

It does not stain the hands; develops clearly, without producing chemical fog; and gives a negative of good color, with any degree of intensity required. A single mixture may be used for the development of a large number of plates, probably fifty or more, without any addition being made to it. It works more slowly toward the end of the day's use, but may be restored in a measure by a small addition of alkali. If a dozen plates are developed, the developer may be returned to the bottle and kept for another day's use. The only disadvantage thus far discovered is the lack of promptness with which the image appears, making the total time occupied in developing a plate perhaps fifty per cent. longer than would have been the case had pyro been used. But the results are fully equal, if not superior, to those ordinarily obtained by the use of the more familiar agent. In using hydrokinone it does not appear to be as necessary to rock the plate as is usually done with pyro, so a number of plates can be put in a dish and left there for development while other matters are being attended to, an occasional glance at them being all that is necessary until they are ready for removal to the hypo bath. It may also be used for bromide prints, and is especially good for lantern slides. A very good formula would be that adopted by Dr. Piffard; say, for No. 1 make saturated solution of hydrokinone about fifteen grains to the ounce; to each ounce of this add 60 grains crystallized sulphite of soda. For No. 2 make a solution containing 30 grains crystallized carbonate of soda to each ounce of water. For ordinary development mix equal parts of No. 1 and No. 2 to each ounce of water, and after using return developer to bottle and keep to use again.

With over-exposures a little bromide of potash may be used with advantage, but less than would ordinarily be used with pyro under the same circumstances. For under-exposure less of No. 1 and more of No. 2; also plenty of water and patience.

I now come to the subject of this evening's entertainment and instruction.

Photographers of all classes have long made research for some practical method, simple in manipulation, and cheap as to cost, for use in making photographs at night. Electricity is expensive, the magnesium ribbon is too feeble and uncertain, and all have so far proved of no appreciable value for general use.

To-night however, Dr. H. G. Piffard, one of our most active members, will read an article upon a recent method devised by him for the production of such a light, and will exhibit for your instruction the whole operation of using it.

We also have with us this evening Mr. Bell-smith, of the Eastman Dry Plate and Film Company, who comes here at our invitation to give a demonstration of American films. You are all familiar with these films, and the possible results which may flow from their usurping the place of glass plates in photography.

It seems imperative that some suitable substitute should be found to replace the weight of glass. Experiments with films which have been made heretofore have shown the necessity of some improvement, so that they may be stripped easily.

The Eastman Company now think they have found the remedy, and every one may rejoice, if such be the fact, to think that the days of carrying glass are numbered, and that one may soon start upon a tour carrying ounces instead of pounds.

During this evening an opportunity will be afforded Mr. Fiske, Mr. Gregg, and others to show and explain various new and novel apparatus in the photographic line which may be of interest to you.

I now take pleasure in presenting to you our fellow member, Dr. H. G. Piffard, who will explain his device for producing the new light. [See page 646.]

I should be glad to hear from members who have any knowledge on the subject of Dr. Piffard's paper. Mr. Rockwood, can you give us your views in regard to the matter? We would be pleased to hear anything you may have to say on the subject.

Mr. Rockwood.—Last evening Dr. Piffard was at my gallery, and I made some negatives interposing a screen between the source of light and the sitter, thus affording an opportunity to soften the light if necessary. This picture of a little child which I have here, and which you can see, will serve to show you how quickly it was taken. I was at the child's side tickling her, and just as she said, "Oh, don't," her picture was taken, and you see her eyes have a very laughing expression.

And here is another picture that was taken [referring to a portrait of Dr. Piffard]. There were four or five negatives, and the light has been so bad that I could not get the prints from them. Here [indicating] is an enlargement made from that same negative by the flash of light. Of course it was the first time we tried it, and we got the light a little too far from the ground glass. The distance from that to the negative was very considerable. That could have been tried so that this picture really would have been over-timed if we had ever had any experience with it.

Here [indicating] is a bromide enlargement taken from the flash negative which we also made last evening. You can perceive for yourselves that it is not harsh at all. The Doctor forbade my modifying it or retouching it in the slightest degree. I think if I had been permitted to study it that we would have got almost as good a result as if we had had complete control of the light. Understand, this is the very first experiment that we have made in this direction. We used the third flash. There is very little to be asked for in the way of softening. There is perfect rotundity to it. There is not any of that peculiar gloss or glisten which we ordinarily get from pictures that are taken by photographers using artificial light.

The *President*—What is your impression in regard to it, Mr. Rockwood? What do you think of its feasibility and its being adopted hereafter by photographers?

Mr. Rockwood—For emergencies this is going to be a great thing. Dr. Piffard says it is going to be a great deal better than daylight. I do not think so myself; nevertheless I am not going to quarrel with him. But there will be emergencies where it will be of the greatest possible use. I think it is practicable to attach it to an instrument which has got a small camera—a pistol for instance—which will be uncovered at the moment of the flash, so that the picture will be taken by the light at the same time, and certainly anything within a distance of fifteen or twenty feet will be photographed accurately and quickly.

The *President*—What have you to say, Mr. Newton, in regard to it? Will you be so kind as to give us an expression of your views, if you have any, in relation to the matter?

Mr. Newton said he would rather not express himself at present in regard to it, but might do so later.

Mr. Rockwood—I have one more thing to say in regard to the matter, if I may be permitted one word more, and that is, I shall certainly introduce it towards the close of the day in my work to supply the light which is necessary for me to take photographs with in the latter part of the day. Very soon now we will be in the short days when the light is very poor and insufficient, especially after half-past four or five o'clock, and I shall certainly supplement my day's work to the extent of an hour or so by the use of this light.

The *President*—I conceive this to be a very useful device for amateurs for taking photographs at home, or where they are spending their evenings out, and desire to take photographs of their family and friends. It will be of inestimable use to them, because the great difficulty of the amateur is want of time during the day to take photographs. This is the general complaint, that they haven't time, and in the evening heretofore they could not take photographs. But the light exhibited this evening affords the means, and if it is all that is claimed for it, will be a great boon for us all.

Mr. Rockwood—It is proper to say, Mr. President, that this is a very severe test of this process, inasmuch as the instrument is of course a much slower one than the ordinary portrait camera. Where a portrait camera would work here in two seconds (supposing that to be the case) this would naturally take six or eight for the same length of time. It is also proper to place a little emphasis on the fact that a screen made of thin material, such as Swiss muslin, should be introduced between the light and the subject. It serves to soften the light very effectually. That is why we get such perfect rotundity in the picture which you have observed here.

The *President*—While they are developing the negatives before their exhibition to you, I wish to introduce to you Dr. H. Valentine Knaggs, of London, who is present here to-night, and, as I understand, leaves for home to-morrow. Dr. Knaggs is a well known contributor to photographic literature, and more especially to the London *Amateur Photographer*. I think he will do us the favor of saying something to us to-night.

Dr. KNAGGS then ascended the platform and spoke as follows.

Mr. President, ladies and gentlemen: I am a very poor hand at making speeches, and so if I do say a few words I hope you will excuse me from saying any more.

I have been now about six weeks in this country and I need not say I have enjoyed myself very much, and that I have been received very hospitably and kindly everywhere.

I am sure we all owe a debt of gratitude to Dr. Piffard for the very interesting discovery he has made, and I for one will certainly practice the taking of photographs in this manner when I get back to England. With respect to hydrokinone, I will say that I have used that a great deal in the development of lantern slides. I find it one of the best developers you can use for that purpose when they are made on bromide instead of on chloride plates. I have used the ordinary slow plates largely for lantern slides, and with this developer too, and I find it is very good, for the simple reason that it does not produce fog. If you use the pyro or ferrous oxalate you will find that if you expose your dry plate underneath the negative in the ordinary way that you will get more or less fog. Of course that does not happen with a chloride plate, but when you have an ordinary bromide plate it certainly does. We had a very interesting paper a little while ago on the subject of preparing lantern slides, in which a gentleman said that he used pyro, I think it was, and he added a considerable amount of sugar and citric acid as restrainers. You will find that the hydrokinone developer will answer as well as that, and I strongly advise you to try it for that purpose.

Then again I should like to direct your attention to two very beautiful pictures which we have on exhibition now at the American Exposition in London. They are two moonlight views of the Niagara River, and I think they are really the finest I have ever seen, and I should strongly recommend you when the views come back not to fail to see them, because they are really beautiful.

Mr. ROOSEVELT—Can you tell us how long they were exposed?

Dr. KNAGGS—No, sir; I couldn't tell you even the name of the individual who took them. They are now on exhibition over in England, and I am sorry they have attracted but scant notice thus far. The gentleman who took them said that some individual had got the idea that photography was a mechanical process and was not an art, and had somewhat slandered the photographic art generally, and he took these pictures in order to refute that idea.

I do not think I have anything more to tell you to-night, but if any of you wish to ask me any questions I shall be most happy to oblige you by answering them.

The *President*—For my part I feel very much obliged to Dr. Knaggs for the remarks with which he has just favored us. It is our earnest desire to be always courteous, and to extend every civility to any visiting brother that we possibly can. I find that when you ask these gentlemen to speak they are always modest and retiring and declare they have very little knowledge of the subject. They are embarrassed in being called upon to address you, and yet you find they are always good speakers and they invariably give you information, and when they leave you you know more than you did when they began. It is a pleasure therefore to welcome our visiting brothers to the rooms here, and I wish Dr. Knaggs would carry back to London our very best and kindliest sentiments.

Mr. ROCKWOOD—Can Dr. Knaggs tell us anything about Mr. Sutcliffe. Do you know whether he was an artist before he became a photographer? The proof that he sent over here is very remarkable, and I have been curious to know what his earlier training was, whether he had been an artist and afterwards took up photography.

Dr. KNAGGS—I cannot tell you, but certainly those pictures are the finest I have ever seen, if you allude to them.

Mr. ROCKWOOD—Yes, sir, I do; I have had some very pleasant correspondence with him.

The *President*—I now have the pleasure of introducing to you Dr. J. J. Higgins, who has a "finder" here that he would like to exhibit. Following him will come Mr. Beach and Mr. Fisk, but before we come to that there is to be a demonstration by Mr. Bellsmith of stripping films, which I know will be interesting to all photographers. Dr. Higgins is a prominent member of the Photographic Section of the American Institute, and a co-laborer with Mr. Newton, one of our most distinguished amateur photographers and a member of this society, a fact I believe you are all acquainted with.

Dr. Higgins then exhibited a new finder, it being an invention of his own, and possessing, he claimed, several advantages over others now in use.

Mr. ROOSEVELT—I desire to move a vote of thanks to Dr. Higgins for his very interesting remarks concerning finders. It is a very valuable piece of information for all who take instantaneous photographs.

Mr. NEWTON—I second that motion. I want to say just one word in regard to the finder. I think the members will fail to understand its operation. It is arranged with a camera so that you can see the object by looking down into it; by turning it over, the image, so to speak, falls out of the way, and you see it on the ground glass. Every one who has made instantaneous photographs understands the necessity of a finder, especially if they are exposing a plate to some object they know they will never have a chance at again. It may be an object which may attach almost untold value to a good and proper negative. Where you have no finder and have to depend entirely upon your guessing as to when the object is in the center of your plate, it depends a good deal on where your head is and the way you are looking. I have exposed a great many plates on rapidly moving objects, like steamboats and sailing vessels, and I have frequently only got part of the object upon my negative or field of vision, whereas if I had a proper finder I would have succeeded admirably. The fact is, I finally had to get one, and I made it myself too, because I could not find one that I could depend upon. It was very crude, but it answered my purpose for several years, and it told the truth every time. I have felt the need of just such a finder as this is probably more than any one, and I am very much pleased to be able to compliment Dr. Higgins upon his success in providing for amateur and professional photographers a finder that they can depend upon, and which they can use at all times, on any camera, and for any purpose, and I most heartily second that motion.

The *President*—A vote of thanks is moved to Dr. Higgins for his valuable remarks upon the subject of finders. All those who are in favor of that motion will signify the same by saying aye; opposed, no.

Motion carried unanimously.

Mr. NEWTON—I would suggest, Mr. President, as this new hydrokinone developer seems to be attracting a good deal of attention, that it would be a good idea to give information to the members of this society where it can be obtained, and its price; and its comparative cost as compared with other developers. I have noticed in the BULLETIN the figures given of the three different developers, ferrous oxalate, pyro, and hydrokinone, and it says the latter is the cheapest.

The *President*—I have no doubt that Dr. Piffard can give you some information in that respect, having made the subject more of a study than most of us here, and I presume that the cheapness of it is largely based upon the fact that the developer can be used almost indefinitedly. It is not like pyro in that it discolors and has to be thown away and becomes weakened, but it can be used and reused, and made to develop fifty and perhaps more pictures with a very slight addition, if any, of a strengthing substance. Can you give us any information, Doctor, as to its exact cost?

Dr. PIFFARD—It can be obtained at Eimer & Amend's, corner Third avenue and 18th street, and I suppose it can be obtained elsewhere, but that is where I got mine, and they charge $1.25 per ounce for it. The solution used contains six grains of hydrokinone to the ounce of finished developer, and it costs three times as much as pyro and you use three times as much of it, so that it costs at the start nine times as much as pyro; but you cannot use pyro on more than two or three different plates and you can use hydrokinone on thirty.

Mr. NEWTON—The price that I allude to is its cost in Europe. It is cheaper there than either of the other developers, according to the BULLETIN.

Dr. PIFFARD—Not cheaper by the ounce, but cheaper by the results possibly.

Dr. KNAGGS—I think it runs between four, five and six shillings an ounce in England now. Hydrokinone is not a new developer. It has been the subject of discussion among photographers over there, and has been used somewhat; but it has only been recently tried by the members of our association, and found to be very useful. There was an article on it two years ago in the *British Journal* Almanac by a gentleman who called himself "Old Hydrokinone," and it was a very interesting paper.

Mr. Rockwood—Right in this connection I would like to say a word about the ordinary minus glass. While I was crossing the Atlantic about a month ago I made a few photographs, and also made a few mistakes. I did not find any pictures on my plates of what I saw, and standing alongside of a man who was very near-sighted, it occurred to me that I had often seen an entire landscape before me in the curved part of an ordinary minus or near-sighted glass, and I said, "Won't you please let me have your glass a moment," and as I did so I saw a complete image in front of me. It occurred to me at once that that would be a perfect finder, and so I had one set in a little frame and screwed it to the top of my camera, having a little screw-head put in the back of my camera in addition to the little screw that catches the ground glass. I put that on there and tried it, and the pictures of vessels in passing across would come to these lines just exactly as I wanted them, and I never made a mistake, so that by the expenditure of from twelve cents to a quarter of a dollar, a minus glass will serve you in good purpose when you cannot get a better one. One will be apt to use it rather than anything else, on account of the fact that you can unscrew it and put it in your pocket or flatten it down on top of the camera.

Dr. Piffard—What number of glass?

Mr. Rockwood—It is what is called a strong glass; that is, it is very concave. If you cannot get what you want, and do not know what would be best (and this one I used happened to be a strong one, and I got about the same proportion of picture on this little bit of an eye-glass as there was on my ground glass), a very safe plan would be, perhaps, to get an uncut one (I paid 15 cents for one the other day) and then compare it with the image on your ground glass, and with a little piece of black paper cut off just enough to get the same proportion of image as there is on the ground glass. Establish two little fine lines, one perpendicular and one lateral; and as the image gets in the proper place on the lens you have it on your ground glass. There is no mistake about it. I tried it very thoroughly.

The *President*—I now have the pleasure of presenting to you Mr. Bellsmith, of the Eastman Dry Plate and Film Company, of Rochester, who will give us an exhibition of stripping films.

Mr. Bellsmith—*Mr. President, ladies and gentlemen:* I have been greatly interested this evening since I have been here listening to the able papers that have been read, and especially the experiments conducted by Dr. Piffard and the admirable examples presented to us by Mr. Rockwood, and the wonderful actinic power of the light displayed here to-night. You have found, I think, sufficient food to interest you for a long time to come, and I promise you at the outset that I will cut my remarks short and endeavor to address myself to my demonstration, which will be also conducted as hastily as possible, so that I will not detain you long.

Ever since photography became popular as a pastime and as a scientific study, there has been a constantly increasing desire and demand for something light and portable to take the place of glass. Experiments have been conducted in this country and in Europe with varying success, and a few years ago the Eastman Dry Plate and Film Company put on the market a negative paper which certainly has met with wonderful success in its day. But it had grave disadvantages and serious drawbacks, and there has been a demand for something better. We have been striving to supply that demand, and I come before you now with the improved film, in which we have arrived at such a state of perfection that we can recommend it with confidence, knowing and believing it can be worked successfully and satisfactorily by all who will give it a little time and experience and master its peculiarities.

For the benefit of those who are not familiar with the manner in which the film or paper is prepared, I would say that we first take a strip of paper for the roll holder that has been previously coated with a substratum consisting of a soluble gelatine; after this is dried it is coated with a gelatine emulsion that is made practically insoluble, so much so that it can be soaked in water up to 150 or 160 degrees without dissolving.

After the negative is developed, fixed and washed in the usual manner—and right here I may say in developing there is only one precaution we advise, and that is to avoid using a developer with a large amount of sulphite of soda or anything else that has a hardening effect on the gelatine. A large amount of sulphite of soda will harden it, and make it perfectly impossible to strip the paper from the film—the *modus operandi* is simply this. We take a piece of ordinary window glass, and, after cleaning it, flow it with a solution of rubber (rubber and benzine), that is allowed to set until it is perfectly dead in its appearance on the surface; it will probably take two or three minutes. As soon as that occurs you can flow it with a solution of plain collodion and that will probably take two minutes to set, or until it ceases to become tacky. Then, by allowing water to run over the surface of the plate it will wash out the ether and alcohol, and as soon as this is washed out it is easy to tell, because the moment the water strikes the collodion it will run into streaks like so much grease, and as soon as that greasiness stops, the plate is ready to put the negative on. Then take a tray a size or two larger than the plate you are handling, and half fill it with water, and lay the plate in it. You should take it holding it with the left hand, with your fingers under the end of the plate, and do not leave go of it. Take the negative and lay it in the water, face down, and press the end so that you can grapple it with the left hand, and the water when it runs out from underneath the negative will carry no air-bubbles away with it. Then with a wet squeegee give it a few strokes and you can lay that negative down nicely. Put it on a flat surface with a piece of blotting paper over it, which will soon extract the moisture out of its surface, and as soon as that is dry, which will take from five to ten minutes, it is ready to strip.

Take the plate, immerse it in water from about 120 to 130 degrees. I never test with a thermometer, but I always know by feeling; I take water that is pleasantly warm to the touch, not hot enough to make you feel like taking your hands out of it. It is far better to have it too cold than too hot. If you take water at 120 degrees you will find it don't require any rocking. Let it lie there a minute and a half, and the paper will separate from the film. As soon as stripped it is ready to put the skin on, and you put your plate in a tray of cold water, and, holding it up in the same manner as you did in placing the negative on the original, take the gelatine skin, run it underneath the water, and grapple it in the left hand, pressing it under. Don't allow the skin to remain beneath the surface more than thirty seconds, but do it without haste. The object is to avoid its taking up too much water. This skin consists of gelatine and glycerine. The glycerine is put in there to give it pliability. If you allow it to remain too long in the water the result would be that your negative gets dry and becomes as brittle as a piece of glass. On the gelatine skin you will find one side has a ground glass surface while the other is perfectly smooth and glossy. In putting on the negative you put the glossy side down, and after taking it out of the water be sure and wet your squeegee and go over it gently, then it can be put in the rack and allowed to dry.

There are no long waits, and you can go that far in a very short time. After the skin is dried flow it again with collodion, and as soon as that is dry, run your penknife around the edge and pull it from the plate. The object of the double coating of collodion is to protect the gelatine from moisture, and it keeps your negative pliable. After you have taken it from your plate you will find it is coated with a rubber solution. That is easily removed, and when it is dry you can rub it off with your hand; or take a little benzine with a piece of cotton and wash it off.

Of course this description seems to give the process a difficult aspect, and makes it appear to you long and tedious, and as I do not wish to prejudice any one against it I will say that I can assure you that by a little patience, and investigating the means of stripping and handling the American films, you will be delighted at the results to be obtained, and will see how simple, really, the whole operation is when you thoroughly understand it.

I will now endeavor to conduct a demonstration practically of what I have been trying to describe. [Mr. Bellsmith then gave a demonstration.]

The films that we have now on the market are twenty-three sensitometer, and unless there is a request or demand for a different number of film we shall not at the present time offer anything quicker than that.

Mr. Fisk—What preparation is made of the glass previous to the flowing of the rubber solution?

Mr. Bellsmith—Not any. I simply take a piece of ordinary window glass and rub it over with my hand, although some might take precaution to use French talc.

Mr. Fisk—Is French talc recommended by the Company?

Mr. Bellsmith—It is.

Mr. Roosevelt—Will old plates answer?

Mr. Bellsmith—Yes, sir; I have got some.

Dr. Piffard then stated that his experience was that the skins would stick for a moment, and in five minutes would rise up in ridges.

Mr. Bellsmith—That was because of allowing the film to remain too long in the water. In that case it is difficult to make it adhere to the negative. I find no difficulty in getting the skin to lay down flat unless I allow the skin to remain in the water a long time.

A *Member*—Is there any harm in flowing a quantity of these plates and keeping them in stock?

Mr. BELLSMITH—You can flow the rubber several days before using if you wish, but the collodion ought not to be put on the plate until just before you want to use it.

A *Member*—Will they stand retouching in portraiture?

Mr. BELLSMITH—Yes. There is one point I would like to have you remember, and that is after your film is squeegeed close to the glass you should lay it down and put a piece of blotting paper on it, so as to keep the film in contact with the glass. If it is not kept under pressure it is liable to work up from the collodion.

Mr. Bellsmith then proceeded with his demonstration, which proved very satisfactory.

The *President*—Mr. Beach has an apparatus, as I understand, which he would like to show us.

Mr. BEACH—I have a shutter here which is intended to go into the place occupied by the diaphragm. It is mounted on a flat piece of brass which forms a back to hold the disk operating the shutter. The shutter is merely a round disk of metal fastened by an arm to a wheel or disk about two inches in diameter. [Adjusting the apparatus.] Now the shutter is set for instantaneous work, and I would say that the novelty in this particularly is the escapement or catch for letting off the shutter, and also for adjusting it to make a time exposure. It is very simple and very certain. It is nothing more than the escapement which you see in a clock, and is divided in the center, the lower knob being fastened to a little lever, and as you move this arm to the right or to the left it allows the lower leg of the escapement to catch the projection on the drum at the back of the disk, in which is a special spring which operates the shutter, and that spring is made strong or weak according as you turn the pointer on the back.

To operate the shutter you turn it around as I have indicated, and you will see the movement. It simply goes and returns. To make a time exposure you simply move the upper lever to the further pin and compress the bulb, and then by releasing the bulb the shutter impinges there [indicating]; by again releasing the bulb it closes so that you can make them as rapid or as long as you hold it.

There is nothing about it to get out of order, and it has the advantage of working between the lenses, and by a peculiar movement it allows more exposure to the foreground than to the sky. The escapement part is the invention of Mr. Gregg, and that is the main improvement. The other part of the shutter is patterned after the Grimston shutter, which is sold in England.

Now as to the different sizes of diaphragms. The plate that this shutter disk moves in is removable, and the idea is to have several of these plates with different sized apertures to correspond with the respective diaphragms of the lens. It is all made very thin and the whole shutter looks less than $\frac{1}{16}$-inch thick.

The *President*—I have seen this shutter before, and it is in use by some of our members now. I think it fills the bill completely, and to my mind is the best I have seen. The little front plate is removable, and it can be supplied with one with a small aperture in the diaphragm, and they are cheaper I think.

A *Member*—They are $10.

Dr. KNAGGS--Have you seen the Sergeant shutter, Mr. Beach?

Mr. BEACH—I do not think I have.

Dr. KNAGGS—It is made by Stanley, of London Bridge.

A *Member*—Does that operate for time exposures?

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. D. R. writes: What is the matter with the prints I send you? Immerse them in water and they will show a peculiar appearance on surface. Bath 60 grains strong, floated one minute; fumed 30 minutes; washed in three waters; toned; fixed 20 minutes, hypo 30 grains strong; washed two hours in several changes of water. I did not notice anything wrong until they were hung up to dry. How long should a correctly exposed negative be in developing? Should a portrait negative be longer developing than a view negative? How can I tell when prints are cleaned? I always keep them in hypo, 30 grains strong, 20 minutes. My printing room is 6 x 10, south window, in which I keep hypo keg and all other chemicals; will the light from this window injure them; if so, which ones should be kept from the light? I fume my paper in this room; will the hypo injure it while drying? Does it injure prints to stand an hour or more after washing through three or four waters before toning them? Is one hour and four or five changes of water enough to thoroughly wash prints? Please give me a receipt for making a good negative varnish. Should there be a little silver nitrate and a few drops of ammonia put in the coating bath every time it is used when four or five sheets are coated at a time? By answering the above questions you will greatly oblige one who is always glad to receive the BULLETIN.

A.—The principal fault we note in the prints is flatness from a lack of proper use of lighting. If there is any special defect we have failed to find it, and would ask our correspondent to favor us with a print with the defect marked. A correctly exposed negative will develop in from one to ten minutes according to the plate used and the strength of the developer. A quick plate with normal developer will take from one to two minutes; a slow plate with a strong developer may be developed in the same time. But much depends upon the way the plate is exposed, whether it has had much or little light, even if the time of exposure be short. A portrait negative should not take any longer than one of a landscape if it has been properly exposed. Prints are cleared, when by transmitted light they are free from mottled appearances. Note the difference in a print immediately after putting in fixing bath, and then when fixed to see mottled appearance. The answers to the balance of the questions will be found in last number of the BULLETIN.

Q.—G. M. E. writes: Will you please send me a good formula for working N. P. A. paper. I have had more trouble lately with my paper. An answer will greatly oblige.

A.—Use O'Neil's formula given in the BULLETIN for 1885, page 79, February 14th. Also look out for changes of temperature in the solutions now that chilly weather is coming on. There is more trouble in not having all the baths at the same temperature than from any other cause in the winter months. Hunter's formula, given page 223 of this year's BULLETIN, April 9th, is a good one for toning.

Q.—G. J. R. writes: Will you have the kindness to give me the formula for "Blanchard's extra bromo-iodized collodion." It is mentioned in J. Norman Lockyer's scientific paper in the English Philosophical Transactions, 1881. I want to use it for the same kind of work.

A.—We have made many searches for this formula, but cannot find it. Perhaps some of our readers can help us out.

Q.—G. B. P. writes: Inclosed please find a print which I send you to examine, and tell me, through the columns of the BULLETIN, the cause of the streaks across it. It is not from the negative, but seems to come from silver bath. It looks like a scum that was on my bath, but I filtered it and the same streaks appear, not on all paper, but often affecting only one or two prints out of one sheet of paper.

A.—The streaks are evidently from scum. This is best removed by drawing a piece of clean white blotting paper, or filter paper, across the surface of the bath before using it. It is often impossible to filter out scum, but the above remedy is effectual.

Q.—H. P. writes: Will you please inform me of the proportions of picric acid and chlorate of potash used in making the artificial light for night photographing.

A.—We do not know any magnesium light mixture that contains picric acid, although we can readily conceive that such a mixture could be used for the purpose, by using the proper quantity of picric acid; but the proportion would have to be determined by experiment.

Q.—S. H. M. writes: Is there any publication which gives complete formulas for enameling albumen paper prints?

A.—Yes; the whole process is described on page 407 of the "Silver Sunbeam," issued by our publishers.

Q.—J. R. M. writes: Are artotype engravings printed from glass plates covered with gelatine; or what plates are they printed from? I would also like the following question answered through the BULLETIN. What common metals are not acted upon by hypo solution?

A.—Artotype prints are made from a gelatine surface attached to a glass plate, the process being that conducted by Mr. Bierstadt, of New York. Last question answered next week.

Q.—C. S. B. writes: Please answer, through the BULLETIN, what kind of ink is used by the photo stock houses in printing card stock? I have occasion sometimes to have some extra printing done, and I can never get any ink to stand the heat in the burnisher.

A.—We do not know of any special ink being used for this purpose. Common printer's ink of various shades answers very well if allowed to dry thoroughly before burnishing.

Q.—L. B. writes: Can you inform me, through the BULLETIN, how I may reclaim the gold from about 150 pounds pure gold-leaf paper so as to make it available in the toning bath ?

A.—Burn the paper to complete ashes, then dissolve the ashes in nitro-hydrochloric acid (1 part of nitric acid and 2 of hydrochloric), dilute with water and filter. This solution should be evaporated to a small bulk and the last traces of acid driven off. By taking up the residue with water and neutralizing with bicarbonate of sodium, a precipitate of impurities will be found which may be filtered out, and the solution can be used for toning. Its strength can only be judged by the color, and we doubt if it will tone well, although worth trying.

Q.—A. J. S. writes: Will you please inform me, through the BULLETIN, if the book on the use of the magnesium light by Gädicke and Miethe is published in the English language? Also the price of the magnesium powder.

A.—The book is not published in English. Magnesium powder is now worth about $1.50 per ounce and is very difficult to obtain at that price, owing to the great demand for it.

Q.—T. J. A. writes: Please answer, through the columns of the BULLETIN, how many ounces of water are required for one ounce of saturated solution of protosulphate of iron to make a developer for tintypes? Also how much alcohol and acetic acid to the same quantity of solution. Please oblige a subscriber.

A.—One fluid ounce of saturated iron solution should be added to 6 ounces of water, and 3 fluid drams each of alcohol and acetic acid, to make a ferrotype developer.

Views Caught with the Drop Shutter.

RED-BROWN PORCELAIN TRAYS are one of the latest novelties in apparatus, and our publishers are selling quite a number of them, They are certainly an improvement over the white trays, as they prevent reflection of actinic light during development.

THE MOUND CITY PHOTOGRAPHIC STOCK HOUSE send us one of the handsomest catalogues we have seen for many a long day. It is marked, "Illustrated Catalogue No. 11," and is the product of the fertile brain and enterprise of H. A. Hyatt, of St. Louis, Mo. It is filled with choice illustrations; is admirably arranged; and must form a valuable work of reference for buyers of photographic materials. It contains everthing necessary for making photographs, from the dry plate to the handsome frame for the enlargements.

S. S. WHEELER, formerly with W. Knowlton, of Fourth avenue, New York, has accepted a position as view operator for the Albertype Company, of New York.

Mr. E. P. GRISWOLD, formerly with the Scovill Manufacturing Company, has recently associated himself with R. H. Moran, of Centre street, New York. Mr. Griswold's friends will be glad to know of his new location and give him a call; he will have charge of amateur photographic supplies.

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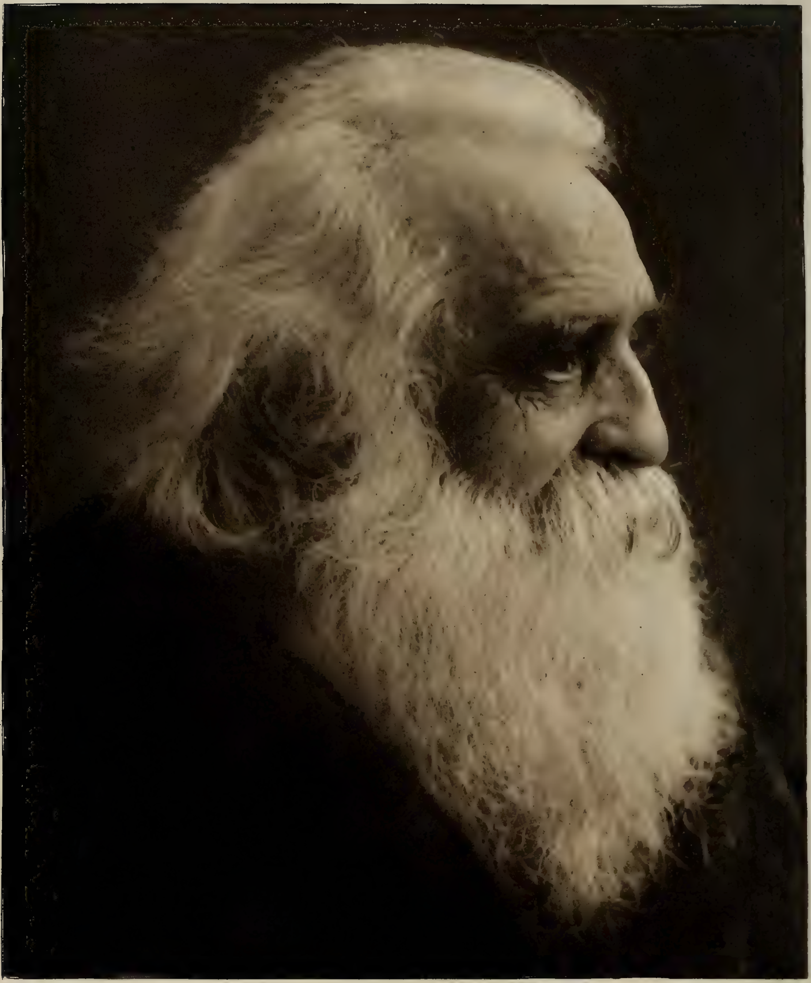
EVENING POST JOB PRINT, N. Y.



Conly, Boston. Photogravure Co N.Y.

"From Life."

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

NOVEMBER 26, 1887. Vol. XVIII.—No. 22.

THE PHOTOGRAPHIC EXHIBIT AT THE AMERICAN INSTITUTE FAIR.

As usual there is a certain amount of space given to the display of photographic work at the exhibition of the American Institute. The men that have pictures there are representative artists, and deserve the highest praise for their enterprise and industry in getting their collections of pictures ready for these displays year after year. But we must still insist that artistic photography in and around New York City is not represented as it should be. We had to make the same complaint last year, and we think it exceedingly strange that the men at the head of the management of the fair, with their well known interests in photographic art, should appear to allow these interests to slumber when they make out the programme for the exhibition of the American Institute. A very little effort on the part of the managers of the fair, which would be readily seconded by the photographic and other journals of this city, would give us a yearly photographic exhibition that would be worthy of our art; a credit to the New York artists; and an education in matters photographic to the mass of the people. Some such effort as this is needed to raise photography out of the merely mechanical phase into the truly artistic position which it deserves, and will, sooner or later, attain. When the fraternity shall see that by showing the world what good work is, they can command a remuneration commensurate with the skill and good taste displayed in its production, then, and then only, will they see those days when photographic picture-making is not working for a pittance, but each laborer will be worthy of his hire. It is in being united in some method of educating public taste in photographic productions that will accomplish this end; and we can conceive of no better method for New York and its vicinity than some good exhibitions of the work of representative photographers at the American Institute Fair. Now a few words upon the pictures displayed this year.

As one enters the large hall the handsome display of Dana in the vestibule, attracts the first attention. Here are pictures, portraits and groups, from 11 x 14 downwards to cabinets, that are in every sense examples of good photographic work. It is impossible to speak in detail of any of these pictures, but they are characterized in having good modeling, excellent posing, and an artistic feeling that we have admired in many of Dana's pictures before. A few of the cabinets exhibited attracted our attention somewhat more than others of this fine display. A group of four, two ladies and two gentlemen, the gentlemen in the center, one standing, the ladies sitting on either side, was a particularly artistic piece of

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work and very attractive. Several groups of children also pleased us greatly in the manner of posing to give harmonious effects in light and shade; while a profile picture taken from the shadow side was excellent and a very fine representation of a pretty subject. We must congratulate Mr. Dana upon his evident progress in truly artistic photography.

Turning to the left into the main hall, the handsome picture of James Landy, of Cincinnati, at once commands attention. This is the original picture that obtained the Blair Prize Cup at the Chicago exhibition of the Photographers' Association of America. We have already given in the BULLETIN our impressions derived from this remarkable production, and still believe that this effort of our good friend Landy is destined to create such a change in photographic art work, that even should he fail to hold the cup, he may still feel proud in having inaugurated such a new and truly higher departure in our art. The picture still holds its place in our admiration, and has that power over our feelings that the first sight of it at Chicago gave. All we can say to our readers is, if you have not seen it, don't fail to go, and, even if you fail to understand our enthusiasm, you will admit the beauty of the production, and maybe it will be a stimulus for you to try to surpass it.

Another truly handsome exhibit is that of the Photo-gravure Company. Here we have a number of large frames filled with excellent examples of the fine work done by this Company in illustrating art catalogues and other books and periodicals. Scenes from "She Stoops to Conquer," "The Taming of the Shrew;" illustrations from "Bryant's Shakspeare," "The Song of the Brook," "A Legend of Sleepy Hollow;" and the Stewart Art Catalogue, give a series of examples of photo-gravure work that are exceedingly beautiful and command the admiration of all who see them.

Pach Brothers, as usual, occupy a large space with their masterpieces of landscape and other photography. These artists just revel in this kind of work, and year after year, as we look at their productions, we cannot help being filled with admiration at the persistence with which they maintain the high standard they have attained. Among the pictures displayed are some fine copies of the oil paintings at the Metropolitan Museum. Pictures of the State Camp at Peekskill are also interesting. Yachts as usual are quite good. A number of fine interiors were also interesting, especially "A Boy's Room" in a New York house. Here the mingling of artistic taste with study and athletics gives an extremely attractive and home-like picture. A number of the cabinets of children are very fine. As usual the boat crews and the college groups of Columbia, Harvard, Yale and others are beyond criticism, Pach Brothers having long since made this class of work entirely their own. Several pictures attracted our attention as particularly interesting. One of these was a group of children with a St. Bernard dog. The animal is particularly well caught, and the children were in that happy mood that adds so much to groups of this character; the picture is well worth study as a fine example of posing. A family group out of doors, at the foot of some steps leading to a house, was also very well managed to get a truly artistic distribution of light and shade, together with characteristic posing in the individuals. Last, but not by any means least, is a large picture of a pug dog, the fine expression of which and the detail in the light and shade of his handsome coat of hair are marvels of the accuracy of our art when used by skillful hands.

Wilhelm exhibits some large pictures, principally crayon finished, which are quite good, that of Ludwig Barney being very fine. We also noted some pretty cabinets of ladies, in which we admired some good posing. Several of these taken from the shadow side were very good. A number with ladies holding small babies in their extended arms, as if in admiration, were excellent; while a group of a lady and three children was one of the prettiest pieces of posing in the exhibition.

Waite has three large frames only that we saw, the best of which was a three-quarter face head of a gentlemen with full beard; a fine piece of work. The head of the lady was good, but we did not quite like the pose. The child picture "After the Bath" was very life-like.

Fredricks had a characteristic display. Fine large work in pastel and water colors, heads and half-size figures of prominent men being very well done. An excellent large photograph of the genial Chauncey M. Depew was much admired, and especially so for the characteristics so well caught in the expression of the face. A pretty group of two girls and a boy, colored in aquarelle, each of the group having same shade of flaxen hair, was a very happy production, with a life-like and pleasing pose. We must also admire the handsome medallion head of a lady in the center of one of the frames of cabinets; it showed some excellent modeling. As usual the cabinet work was very good.

Weismantel improves very much as time rolls on. We must now admire his artistic posing, it shows study and thought. The modeling of the pictures is good, and partakes of the general good advance of the exhibit over former years. The pictures also show excellent finish and good taste in the mounting.

De Youngs made a display of oil paintings that took up the greater part of the space of his exhibit. Some of the crayon work shown was very fine, both ladies and gentlemen. We did not note any purely photographic work.

At this point in the collection at the fair, the Air Brush Company have a handsome exhibit of the work done with their apparatus. Among the pictures is a very fine portrait of the late Henry Ward Beecher, characteristic, and having a soft and artistic finish that we have failed to see produced by any other method. An expert artist was at work using the apparatus and interested crowds thronged around her, admiring the beauty of the results and her dexterity in the use of the instrument. Those of our readers who have never seen an air brush at work should go to the fair and see the interesting operation of it.

Parkinson had a number of large pictures in his usual fine style. A handsome portrait of James G. Blaine was an admirable piece of work. But the best and most attractive picture in the exhibit was a fine bromide enlargement of a St. Bernard dog reclining, with head raised slightly upward. This was from a cabinet negative, and the enlargement was 30 x 40 inches. Another attractive picture was a little girl in a night-dress with a kitten and a load of toys, after the manner of that well known picture "Early Cares;" it was exceedingly pretty and a truly artistic study.

Rockwood had a number of enlargements that were very fine. A group of two children and dog was a very happy production and in harmony with the artist's usual good taste with children. The display of children's pictures, particularly the larger heads in the cabinet size, were in that style of fine work in which Mr. Rockwood has earned a well-deserved reputation. These pictures are noted for the beauty of expression in the faces, fine modeling, and an artistic eeling in the pose that is characteristic of the artist himself.

Ehrlich had an exhibit of large work in pastel and crayon that had about the same character as that of last year. We do not think we can record any progress in this work.

Altogether the photographic exhibit of the fair is fully up to that of last year. Nevertheless what we have said about a development of this feature of the fair is our honest opinion and we hope that the managers of the American Institute will ponder over what we have said, and should they take any more energetic action in the matter, we wish them God-speed, and shall do all in our power to second their efforts.

EDITORIAL NOTES.

We are indebted to Mr. Frank H. Pullen, of Lowell, Mass., for an excellent account of the third annual exhibition of the amateur society there. It was held in Mr. Morrell's studio, and was open three days to the public without charge. In quality and quantity it was an advance on former exhibitions, a marked improvement being shown in the selection of subjects and their general treatment.

Among those who exhibited at Lowell we note Mr. Charles E. Edson, with photographs illustrating Tennyson's "Song of the Brook;" Alex. M. Abels, E. J. Goward, W. P. Atwood, A. S. Guild, Frank H. Pullen, George A. Nelson, George E. Tull, Mr. M. W. Snyder, W. A. Farwell, and Miss Emma Gay, all of whom had pictures of interest and good composition. The exhibition was in charge of Messrs. W. P. Attwood, George A. Nelson and Frank H. Pullen, and it was interesting, judging from the ample notices given to it by the local papers.

The Photographic Society of Philadelphia, at a recent meeting decided to remove from its present crowded quarters on South Fifteenth street to 1305–1307 Arch street. Considerable discussion took place as to the fitting up and arrangement of the dark room and other business matters, so that no photographic papers were read, and consequently no special matters of interest to those outside the society.

Dr. J. M. Eder, Director of the Imperial High School at Vienna, is also to be Director of the new Austrian Government School for instruction in photography and photo-mechanical printing, which opens March 1, 1888.

Mr. Muybridge calls attention to the fact that a picture of a rainbow over the falls of the Yosemite was taken as early as February 12, 1868, and not recently, as claimed by Mr. Plomer before the London Photographic Association. But there is a very decided difference between the "bow in the clouds," which is a very evanescent affair, and the prismatic display seen in a water-fall, whose appearance is permanent when the sun shines in the right direction.

A book containing the results of Mr. Muybridge's wonderful experiments in photographing animals and birds in motion is now in the press. These experiments were undertaken under the patronage of the University of Pennsylvania, which has afforded him every facility for his studies on animal locomotion. The work no doubt will be the most remarkable portfolio of photographs ever issued in one series for scientific or art purposes.

A NUMBER of amateur photographers met in Newark, N. J., the other day and effected an organization. W. Barnette Smith was elected President, and John H. Hart, Secretary and Treasurer. A constitution was adopted in which was a clause requiring a public exhibition of pictures every three months. All amateurs of Newark and vicinity are invited to join the organization.

WE are indebted to Messrs. McKeckie & Oswald, of Toledo, O., for a neat and artistic invitation to their art reception of November 3d, 4th, and 5th. We regret our inability to attend personally, but understand from reliable sources that the art rooms are well worthy of the attention of those living in Toledo, and reflect the good taste of the proprietors.

THE photographers of Texas met at Dallas on October 28th and effected a State organization. The officers are: J. H. Webster, of Dallas, *President;* W. D. Jackson, of Waco; D. H. Swarts, of Fort Worth; C. J. Wright, of Houston; P. F. Goben, of Dennison; J. W. Wetherington, of Brownwood, *Vice-Presidents;* and C. F. Cook, of Dallas, *Secretary.*

WE have just seen a handsome bromide enlargement made by Kuhn Brothers, of St. Louis, on our publisher's reliable bromide paper. The subject is the M. A. Seed dry plate works at St. Louis, and is admirably done. It appears to us to leave nothing to be desired as to the quality of this new paper.

WE would specially call the attention of our readers to the call we make on another page for back numbers of the BULLETIN. Those having extra copies will oblige us by forwarding them to our office and we will remit full price for them.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

About Instantaneous Shutters and their Time of Exposure—Callotypie: a New Process of Photo-block Printing—Photography and the Balloon—Obernetter Emulsion—No Light no Sugar.

INSTANTANEOUS shutters are so much advertised in the photographic journals and in catalogues, that one is led to believe we are well acquainted with them, and now it turns out that we do not possess even a moderate knowledge about the time of exposure. Whatever has been said about this is wrong, and we have deviated far from the correct figures we are taught by Londe, who has made some interesting measurements. He found with different instantaneous shutters the following times in fraction of seconds:

Probable time of exposure.	Actual time of exposure.	Probable time of exposure.	Actual time of exposure.
$\frac{1}{125}$	$\frac{1}{70}$	$\frac{1}{500}$	$\frac{1}{100}$
$\frac{1}{50}$	$\frac{1}{40}$	$\frac{1}{50}$	$\frac{1}{35}$
$\frac{1}{250}$	$\frac{1}{100}$	$\frac{1}{100}$	$\frac{1}{40}$
$\frac{1}{100}$	$\frac{1}{25}$	$\frac{1}{110}$	$\frac{1}{70}$

this method of measuring gives the results rather shorter than longer.

From this it is to be seen that the instantaneous shutters which are in the market have a much longer exposure than has been published. Londe adds:

"There are very few instantaneous shutters which have only $\frac{1}{100}$ second exposure. The quickest one made to our order had $\frac{1}{250}$ second as time of exposure, which requires the most sensitive plates and can only be used with very brilliant light."

Londe also draws attention to the fact that it is very difficult to determine exactly the time of exposure of instantaneous shutters, and that this time is generally estimated too short.

"Take a small piece of black board with a white dot in the middle and let it drop in sunlight, taking an instantaneous view of it at the same time, and you will find that the white dot describes a vertical line which increases in length in proportion to time of exposure, and as the rapidity of the falling board can be exactly timed, one is in a position to calculate from the length of the line in the picture the time of exposure."

Still this is not entirely correct, as the white spot will not commence to act on the plate before the objective has been opened to a certain extent, and will cease to act before it is completely closed. For this reason the line appears so much shorter, as the illumination of the white dot is weaker. A very bright illumination is therefore required, whether this test is applied or any other similar one.

A remarkable process, originating with Professor Husnik, has made considerable sensation here lately, the production of a glass relief from which direct prints can be made without the need of any zinc etching. Husnik exposes a gelatino-bichromate tissue under a negative and then develops the relief picture in a peculiar manner. He says:

"My method consists in the application of a saturated solution of bichromate salts for developing, a new and still unknown property of the chrome salts thus coming into employment. These salts, in comparison with the acids, have the advantage not only in dissolving all unexposed gelatine during development, but also in hardening the already exposed parts of the picture upon the copy to be developed, the impression received from the light being increased by contact with the above chrome salt solution. In this way the relief can be developed a longer time, and becomes deeper."

Another new phase is the manner of the second development.

"I interrupt the first development before the fine parts have been injured, let it dry, cover the white parts (the sub-ground) with printing ink diluted with turpentine, using a fine brush quite near to the lines, and then expose the whole relief once more to light. The relief, on account of its having taken up much chrome salt during the first development, is very sensitive to light, and hardens not only on the surface, but also on the sides of the lines. After removal of the black ink it can be developed to any depth, particularly if the larger white parts have before been cut out with a knife."

I have seen blocks produced after this process from which 5,000 prints had been made, which were still in a completely uninjured condition. Several of these have been copied for the illustrated papers.

Another subject pretty much talked about at present is balloon photography. Particular attention is paid to this by the military division for balloon ascension. A number of views have been taken during some of the late ascensions, which were laid before the German Society for the Promotion of Aeronautical Shipping and were admired very much. This department applies photography in three directions. First, for the investigation of balloon material, ropes, cables, etc., by means of photo-micrography. Second, for the instructive representation of the manipulations in balloon ascensions. Third, and this is the most important, for views taken from the balloon.

With regard to the latter, the department can show results surpassing everything accomplished in this direction before. The views are from different elevations from 200 to 2,500 meters. Particularly successful is a view by Schoneberg; three views of the environs of Potsdam; another showing the country from Belle Alliance square to the Donhofs platz; and a view of Berlin taken from the north at a height of 1,700 meters, which is extremely sharp notwithstanding the great elevation. Parts of the pictures could at the same time be presented in enlargements, in which size they are actually intended for military use. The enlargement is made from the first plate upon gelatino-bromide paper. As a general thing, photographing from a balloon has its difficulties, but by a number of novel arrangements, being kept secret in the interest of the service, these difficulties have been greatly surmounted.

Many of your readers will undoubtedly remember the Obernetter emulsion spoken about a good deal in Europe four years ago, as well as in America. In both countries it met with strong opposition from many sides, hurting the feelings of the now deceased inventor greatly by questioning his honesty and integrity. I supported his ideas and fared no better. My son has now tried the process, and he obtained such excellent results with it, that he intends to work it entirely. He uses the old formula, adding nothing and leaving nothing out. Professor Sherman,* of Baltimore, who was here some six weeks ago, learned it, and is going to make use of the same for his spectral views. The sensitiveness is the same as good dry plates, but they have more the character of wet plates, fix very easily and quickly, wash easily, and are well suited for color-sensitive plates.

It is known that the chemical action of light does not only play a role in photography, but also in the household of nature. But it is new that the existence of one of the most indispensable substances used as a means of nourishment—the cane and beet sugar—is exclusively due to the chemical action of light. Girard has proven by thorough examination that beet sugar is not first formed in the roots from glucose or its compounds, but originates in the leaves directly under the influence of light. The quantity of reducing sugar in the surfaces of the leaves and stems is for a certain period the same during the decline of day or night; but the cane-sugar volume on evenings of sunny days rises to 17 per cent., and disappears during the night one-half, or even in a quarter degree, by entering into the roots and accumulating there. The sugar production taking place in the leaf surfaces, the extension of the same is certainly of interest: It amounted to, in square c.m., 330, 740, 2,610, 3,300, 3,700, 3,370, 3,000, 3,300, 3,500, 3,520. If, for instance, the leaf crown of the plant weighs 500 grams, and the leaf surfaces amount to 40 per cent. of the total surface, the crown may contain in the evenings of sunny days up to two grams cane sugar, of which about one gram may go to the root over night, being 100 grams in 100 days, or at a root-weight of 750 grams, 13 to 14 per cent. of sugar.

Thus the light helps most emphatically to sweeten our life. No light, no sugar.

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* We believe Dr. Vogel means Professor Rowland.—Eds.

NINE YEARS A TENT PHOTOGRAPHER.

By E. A. Bonine, *California.*

I GENERALLY fill my plate holders in the dark in my dark room; and while in Arizona it frequently occurred, while dusting them with a camel's hair brush (holding the plate in one hand and dusting with the other), that electrical sparks were thrown off, the flash being similar to that from striking a stone with a piece of steel.

After a sand-storm, which generally lasts three days and nights, the air is very cool, fresh and bracing, and of course very electrical. It is so dry, that crumpling a piece of newspaper up in your hand and closing it, on opening you find the paper all broken into little bits. I have seen the water in Arizona in places so alkaline that I developed plates with pyro and water only, no soda or ammonia being necessary.

I have retired from portrait photography after having my head under a cloth looking into human faces for twenty years. I grew weary with the vanity of human nature, and weary of trying to please people who had no idea of what they look like. Once I took a picture of a man and he said, "I don't like that; it does not look like the last one I had taken." "How long is it since the last was taken?" He replied, "Forty years."

Once in the middle of my printing a fellow came in drunk and wanted four tintypes; I took them, and he said very good-naturedly and graciously, "I have no money to pay for them, but just take me four more; I want to see how I look eight times."

I was tenting in an Arizona town and quite a number of Mexican children died. These people are quite fond of pictures, and seem to like corpse ones if they have none taken in life. Most of them in the town I was in preferred having them standing, so I ordered them to place the corpse against the back of a chair and tie it thus outside of their doby house in the sun; and I will say that a standing corpse picture looks much better than one lying down.

I was called out on another occasion to take a dead Mexican's picture. He had taken too large a dose of whisky, which killed him. I ordered them to bring the corpse outside, and what was my disgust when they said they wanted two small boys to stand with him. It was in a lying position, and of course I had to focus with a large stop on the boys, for they were small, and face of the corpse; the craft can guess how large the feet were, six feet in front of my focus. If I had the job to do again, after a larger experience, I would have either stood them all up or laid them all down. In another town a woman had given birth to twins and died. Her relatives came into my tent with the corpse in the coffin and wanted a photograph. I stood one end of it up on my operating chair and the other on the carpet, and the friends and mourners lit candles and stood around the coffin while I exposed the plate. Then one fellow took it, lid on edge, on his shoulder and started for the graveyard, the others following, sheep fashion, without much order. They had a violin and guitar, which they played.

In many of the Mexican cemeteries the poor people pick up two sticks, tie them together in the shape of a cross and place at the head of the grave—the profane say, "Place a Jesus Christ at the head of the grave."

While at Yuma, an old chief of a tribe of Mexican Indians died. As the Indians on the Colorado River burn their dead, I went to see it cremated. They had a layer of cottonwood logs laid side by side, and laid the dead Indian on them; then piled other dry logs on him and covered sides and top with dry sticks and brush, and set on fire. The old chief of the Yuma's was there and made a speech The Indians of the dead chief's tribe turned their faces and sobbed and cried. It was a sorry sight, hat warm, still October morning. Surely, I said, the same power expresses itself in all forms of life, only in different degrees of development—more in my opinion. Here was a poor, ignorant people—children of nature—cremating their dead, in this particular step far ahead of those who bury them.

I hope this sketch will not be too grave for your columns. Adios.

[*From Art Amateur.*]

TONING AND FIXING.

BY GEORGE G. ROCKWOOD.

The first thing to do is to soak the print in a dish of clear water for a few minutes, and thus wash off the free nitrate of silver remaining upon the surface of the paper. A half hour's soaking, with one or two changes of the water, will effect this, and the print will then be ready for toning.

Chloride of gold, the most important ingredient of the toning bath, is sold in bottles containing fifteen grains. Dissolve this in thirty drams of water, add a drop of hydrochloric acid, and preserve the mixture as a stock solution in a bottle; mark it "gold solution." Make in another bottle a saturated solution of washing soda, also as a stock solution; mark it as such, "soda solution." When the prints have been washed, as before described, and are ready for toning, mix one dram of the gold solution with one ounce of water. Pour it into a tray, and drop in a small piece of blue litmus paper, which will become red. Render the bath alkaline by adding from the soda solution, drop by drop, until the paper begins to change to blue again. It is better to prepare the toning bath during the day, while the printing is being done, as the bath then seems to work with more smoothness and uniformity. It may be used as soon as mixed.

The print is now taken by two corners and immersed in the gold or toning bath. At first the print will begin to bleach, and turn a warm red color, which soon changes into a beautiful warm black. Put in the prints one by one, keeping them separated or constantly in gentle motion. When a deep purple or warm black is obtained, remove them to a basin of clean water, and rinse them until all are toned, when they will be ready for immersion in the fixing bath, which is to render them permanent. The greatest care should be exercised in not permitting the slightest trace of the fixing bath, or hyposulphite of soda, to reach the toning bath or the prints until they have been immersed in the fixing bath. Such contamination causes yellow, dark stains, which cannot be removed, Therefore one who is toning but a few prints can tone with the left hand, and, passing the prints to the other, the right hand can immerse the prints in the fixing bath. But this is dangerously near, as one solution may be spattered into the other. The shortest distance between the two solutions in my establishment is certainly ten feet.

The fixing bath is made of six ounces of water and one of hyposulphite of soda. This solution removes from the paper all of the chloride of silver that has not been acted upon by the light, but does not injure the picture. The usual time for leaving the print in this bath is about fifteen minutes. If the print is held up to transmitted light before it is placed in the solution, it will appear quite opaque and cloudy in what should be the clear parts of the picture. After it has been in the bath the proper time this will disappear, and the print will have a clear, translucent effect. It should now be washed in two or three changes of water, and left to soak in a dish of water all night. In the morning it can be hung up to dry, and then mounted. If haste is necessary, the print, after coming from the fixing bath, can be rinsed in water and passed through a common clothes-wringer a few times, after each time being dipped in clean water. It will then be perfectly washed. When quite dry, it may be mounted on card or Bristol board, the best paste for this purpose being common laundry starch.

When directions are given to prepare and keep the sensitive paper in a dark room, it will, of course, be understood that daylight only is to be excluded; gas or candle-light are permissible. A window closely covered with yellow paper completely filters the light of all actinic or chemical power, and consequently will do no harm. After the final process, or fixing, take the greatest care that the prints do not again come into contact with the hyposulphite of soda. Soda is indispensable in its way, but exceedingly harmful out of place. So be careful to keep all the dishes and your fingers free from it. In all of the manipulations observe the most perfect neatness. Handle the prints with the tips of your fingers, and always with deliberation and care. If the silver solution grows weak by use—a mealy look to the prints indicates it—add a few grains of nitrate of silver. If by use it turns a dark wine color, and the paper is not white when dry, set the solution in clear sunlight for a day or two, and it will clear. Filter it before using again. The soda (fixing) bath should not be used more than two or three times. Where prints are only occasionally made, a fresh bath should be made each time of printing. The gold (toning) bath works quicker when warmed to about blood heat; prints will then tone in from two to six minutes. Prints on plain paper will tone quicker than those on the albumenized. If your prints are under-toned they will have a warm brown appearance; if toned too much, a cold steel color. A little experience will soon indicate the precise degree of toning required.

If you do your own printing and toning you must be prepared to have stains on your hands and clothing from the nitrate of silver. They may generally be removed by moistening the spots with tincture of iodine, and then with a saturated solution of hyposulphite of soda. Cyanide of potassium will remove them more quickly; but it is deadly poison, and is not recommended.

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THE MAGNESIUM FLASH LIGHT.

To the Editors of the Bulletin.

Your editorial on the magnesium light for instantaneous photography mentions a suggestion I sent you regarding the use of sugar instead of the antimony sulphide of the German formula. I think it may be useful to record certain observations made regarding it.

The formula I use is as follows:

Potassium chlorate	30 grains.
Magnesium powder	15 "
Sugar (granulated)	15 "

When this powder, well mixed, is lighted, it will flash up with a bright light for a small fraction of a second, the time of exposure and illumination being equal to that resulting from lighting the gun-cotton and magnesium compound, 15 grains each. I do not think that the color of the smoke of the sugar affects the result. I have obtained full-timed negatives of groups, at a distance of nine feet, using a Steinheil aplanat with a focus of 5½ inches and the next to the largest stop. The plates are very rapid; size, 4¼ x 6½.

If the sugar is powdered very fine before mixing, the effect is to prolong the exposure without apparently reducing the illumination, that is as shown by the effect upon the plates. The length of exposure is doubled.

So far as my experiments have gone, reducing the amount of powdered sugar shortens the time of exposure. This is an interesting point, because of its application to the photographing of dark interiors; although for groups, the flash light, if not too far removed, is better.

In photographing groups it is well not to have subjects look directly at the light, and it is always better to diffuse the light through a screen.

When exploring a new country it is often useful to make notes as we go. Every observation is of value when carefully made, however humble the observer.

Yours truly, THOS. W. HARVEY.

[*From Photographisches Wochenblatt.*]

HARMONIOUS EFFECT IN LANDSCAPE NEGATIVES, AND THE PRINTING IN OF CLOUDS.

BY F. STOLZE.

(*Continued.*)

AN additional case is the inharmonoius distribution of cloud formations, which separately might each be called handsome. The prettiest cloud masses, if only partially grouped, may rob a landscape completely of its uniformity, and under such circumstances it would be a mistake to expose a plate on them.

The same may be said of cloud formations which, as for instance the very light feather clouds, are pretty, but possess so very little power of illumination compared with the sky, that they can hardly be taken with ordinary plates. In such cases it is better to renounce the idea of any reproduction.

The whole number of cases combined in which it would be of advantage to print the natural sky with the landscape, will be found to be only exceptional ones, and that, as a rule, one must be prepared to renounce all natural cloud effects and to replace them by printed-in ones of our own selection. The question now arises: Which way of making the negative, and which kind of cloud negatives are the most advantageous?

There is no doubt that for the printing of light objects with fine half-tones and delicate modulations, as clouds generally are, it is best that the surface intended for the same has not yet been subjected to any of the effects of light, or at best only very moderately. If therefore the exposure of the landscape was such that the sky of the negative may practically be designated as opaque, this condition may be considered sufficient, otherwise it is necessary to cover the negative on the back, and under some circumstances also on the face. The latter case will be particularly employed when the horizon is formed by objects which set off very little towards the sky, as, for instance, distant mountains, etc., and where one would also risk losing the outline of the horizon and all details by a sufficient opacity of the sky. Otherwise the horizon must not contrast too much with a covered sky that the latter can be recognized as laid on. Regarding the kind of cloud negatives, it may be remarked here, once for all, that they should be thin and faint, entirely different from those magnificent cloud pictures found in the market as studies for artists, showing all changes, from the brightest white to the deepest shadows.

Not acting, like the latter, as independent objects, but corresponding to the conditions of light of the landscape in light and shadow, their darkest parts must still be of efficient light action. Those who make the mistake of copying too strong clouds into their pictures produce landscapes of a heavy and gloomy character without any uniform effect. It is not very difficult to print such thin cloud negatives with an almost white sky, if the light is subdued by a paper roll laid parallel upon the frame, and it is then almost impossible that a cloud will show beyond the line of the horizon.

What I have said here may be sufficient for every one acquainted with the printing process. But it is still necessary to say a word more in regard to the kind of clouds represented in the negatives. For often the photographer will reproduce the same cloud negative upon different pictures, even upon such as were taken under entirely different conditions. It should be remembered that the clouds of a picture should be in entire harmony with the same in regard to its illumination, form and size, if the impression is to be a harmonious one. It is therefore necessary that the cloud negatives used for a landscape be placed in the same form and illumination, with equal elevation of the clouds above the horizon, as in the picture. A different illumination will give the landscape a peculiar impression and destroy every uniformity. If the clouds were taken with double the focus of the landscape they will appear gigantic (every cloud formation having its maximum size) and rest heavily upon the picture. Regarding, finally, the relative height above the horizon, it should be considered that clouds generally are flat formations, partly parallel to the surface of the earth, and approaching the shape of stripes, to comprehend how disturbing blunders against this rule are.

Every landscape photographer who wants to print clouds with his landscapes should be provided with a large collection of cloud negatives, which are so regulated and registered that he is enabled to find a suitable one for every case. If he works with different focus lenses a complete collection would be necessary for every one agreeing with the former, aside from the dimensions. In the register should be mentioned what horizontal angle the sun made with the objective axis at the time of taking the view, whether right or left, and how high. No cloud negative should be without the horizon. If care is taken in printing that this horizon approaches the original one, that is if it passes the point where the horizontal objective axis touched the picture, the clouds will have the correct elevation above the horizon. Such cloud collections should be kept by the dealers, paper negatives being preferred, which, even if not transparent, would print quick enough for this purpose. The proper selection of suitable negatives remains so much a matter of taste, that the use of such a collection is much more preferable than one made by our own means. To make from 50 to 100 of such cloud negatives would be no easy matter for individual use.

Probably it might be also desirable to make note of the time and the place where the view was made. Every season has its own particular cloud formations and they differ in different localities; on the sea-shore, the open country, and the mountain districts. Collections might even be had arranged by seasons and localities, and undoubtedly they would find numerous purchasers.

In stereoscopic pictures the printing should be avoided, because they will never act correctly, and in marine views or water scenes care should be taken that clouds correspond with the reflection in the water.

Although much improvement can be made by the printing in of clouds, a further treatment of the negative is oftentimes required to obtain the best results. I will not speak about the actual retouching on the face of the plate, but restrict myself only to the means, which may be applied from the back, to influence the intensity of the light.

In the first instance is the flowing of the plate with substances making the negative opaque, and which afterwards may again be partly removed or even increased. For such purposes are particularly applied mat surface varnish, colored varnishes and collodion. Regarding the surface varnish most generally used, it admits a removal as well as drawing on with a pencil. The excellent Clary's mat surface varnish consists of

Mastic	7	parts.
Sandarac	32	"
Ether	360	"
Benzol (according to depth of grain required)	130 to 180	"

Mat varnishes have only a moderate covering power and are not sufficient where great contrasts are required. In such cases tissue paper is also used, pasted on the back of the negative, and which is also suitable for pencil retouching and partial removal. I would like to recommend another means. Lampblack and glycerine, finely ground, added to the varnish, by shaking it thoroughly, is very good. One is enabled in this way to obtain any desirable degree of opacity, the glycerine even adding to the formation of the grain. The coating may be entirely removed, as with the pure varnish, and the grain can be varnished over, admitting also the retouching with lead pencil, the neutral black color of the varnish being of great advantage.

If it is not intended to retouch upon the film afterwards and nothing is required but scraping it off, plain colored collodion is to be preferred to the gray varnish, the scraping off being done much easier with it, and by the removal of larger surfaces it can even be accelerated by moistening around the scraped parts. Should a pencil retouching still be required afterwards, it is only necessary to cover the film with a varnish which does not dissolve the collodion. Any negative varnish, to which has been added a suitable quantity of glycerine or one per cent. of acetic acid, will do. This method has even an advantage over the application of the colored mat surface varnish, thus admitting between the gray coating and the clear glass the application of another film, and with the aid of the pencil the gray film can also gradually be reduced.

Notwithstanding all these means, it sometimes takes a good deal of time to keep all the different parts soft enough in preparing such a plate. A much easier and simpler result is thus obtained by making use of the diffused light applied in vignetting. Particularly in architectural pictures giving strong contrast, I have made use of this to advantage. Of course it is not possible to arrange the negative for this purpose, but everything for the same must be arranged in the printing frame. After the negative has been placed into the frame, the latter is closed and a piece of fine muslin stretched over the face, or a large glass plate is fastened to it. Pieces of tissue paper are now pasted on suitable parts of the frame, and they can be made more transparent by vaseline, or by a second layer be rendered much more opaque, thus obtaining the most varied effects. According to the distance of these marks from the negative the latter will be softer or harder. To form a correct judgment about the effect, several impressions should always be sacrificed, under renewed improvement.

(*To be continued.*)

[*From the Nation.*]

THE ECLIPSE EXPEDITION IN JAPAN.

BY MABEL LOOMIS TODD.

The important day has come and gone—the eclipse is over, and the old castle, selected by Professor Todd for the station, will again be left to its clematis and ivy, its lizards and crows; while the unwonted activity which has centered here for the past few weeks will depart with the instruments and the white tents. Sixteen thousand miles of continent and ocean traversed for three wonderful minutes, and unremitting labor during every clear night, and on all days of whatever sort, all for that little time, which may be cloudy or not at its own sweet will. Such are the chances of an astronomer's life, but glorious his compensation when nature is kind.

The principal instrument used on this occasion for observing the eclipse was the photoheliograph, a form first devised by the late Professor Winlock, and independently by Captain Laussedat, of France. It consists of a heliostat mounted upon a pier, the large stone for which was taken from the old castle wall only a few feet away. The heliostat has an unsilvered mirror set at such an angle that it shall reflect the sun's rays through a lens, and thence through a tube nearly forty feet long, into the dark room or photograph house. The tube was in this case covered by a sort of roof and sides of bark to prevent its accumulating heat from the sun's rays and thus disturbing the light in its passage. The mirror is a piece of plate glass, polished with as great accuracy to a plane surface as the finest lens to a curved one, and it is left unsilvered because all of the sun's rays reflected into the dark room would be too intense for the purpose. It is made to revolve upon an inclined axis in the same direction as the sun moves—from east to west, so that the direction of the reflected rays remains constantly unchanged. The actinic, or photographic rays, coming to a focus at a different distance from the ordinary optical rays by which objects are seen, the lens is corrected for the former. This instrument has never been used before to photograph an eclipse, and it was brought at this time for that purpose in order to obtain a more correct knowledge of the relative positions of the centers of the sun and moon than could be gained by observing merely the contacts.

The photographs of the partial phases are upon plates seven inches square, and it was intended to take fifty before totality and fifty after, while the corona photographed by this instrument would be given on a larger scale than ever before. The image being formed nearly forty feet from the object glass, makes the sun's diameter about four and a half inches, on plates themselves 17 x 20. Shortly before totality the mirror is exchanged for one which is silvered, with a surface as accurately figured and polished as the first one, all of the rapidly fading light being now required in the dark room.

In order to manage the photoheliograph with proper precision, the services of six persons are ordinarily required. These should be the astronomer in charge, who makes the exposures at the proper moments, and the necessary records; the assistant astronomer, stationed at the heliostat, whose duty it is to see that the sun's rays are constantly reflected in the proper direction from the mirror; and a photographer, with three assistants, to attend to the necessary manipulation of the sensitive plates. The services of an assistant astronomer could be dispensed with if the screws by which the heliostat is adjusted could be brought under the control of the chief astronomer in the photograph house. Chief-Engineer Pemberton, U. S. N., who was detailed with Lieutenant Southerland from the Asiatic squadron to accompany the eclipse expedition, was occupied a large part of the time in the particular working out and applying this device, which was found to work admirably. This is so important an addition to the apparatus as heretofore operated, that it may well come into use on future occasions where the instrument is employed.

Professor Todd placed the immediate direction of the photographic operations in charge of Mr. R. Hitchcock, of the Smithsonian Institution, now teaching in Osaka. He was ably assisted by Mr. K. Ogawa, of Tokio and Miss Y. May King, M.D., a young Chinese lady who has recently graduated brilliantly in medicine in New York, and whose fine work at the Smithsonian with Mr. Smillie in microscopic photography has received much attention. Nothing was spared to make the photographic outfit as complete and thorough as possible, and a number of experimental investigations were undertaken for the solution of problems occurring for the first time in eclipse photography.

In order that pictures shall be available for scientific purposes of precision, it is necessary that some line whose exact direction and position are known shall appear upon each photograph; a small plumb-line of fine gold wire is therefore suspended in front of the sensitive plate. When the exposing slide is drawn and the sun shines on it, this line appears with great definiteness upon every picture of the sun which is made. When the eclipse has advanced to such a stage that the crescent is very slender, its light is not enough to show this line, and it was found necessary to devise some means of making it sufficiently luminous to show upon the plate. This was not an easy matter to accomplish. The outer light would not be strong enough to be used on account of the near approach of totality; and artificial light has not sufficient actinic effect to impress itself on the plate, except with a longer exposure than could be given to it at that varying phase when the exposures should follow each other in the most rapid succession. The problem was finally solved by throwing two rays or pencils of light upon the top and bottom of the plumb-line, coming directly from a kerosene lamp placed upon a small elevator, to be raised and lowered by the hand immediately after the crescent had been exposed—thus giving virtually two exposures to each plate, and showing the plumb-line as a delicate line of light both above and below the crescent itself.

It is generally recognized that wet plates give the best results in the photography of astronomical phenomena, the only objection to them being that they cannot be manipulated as rapidly as required in eclipse photography. But it was considered inadvisable to employ the dry plates now so much used, on account of the high temperature, and experiments were therefore tried of different methods of preserving the sensitive film of wet plates prepared by the ordinary process. The results were wholly successful, even beyond expectation, and several sets of plates were prepared some hours before the eclipse began. Although it was intended that the preservative should do its work for four or five hours only, a number of plates were exposed in the photoheliograph on the day following the eclipse, and were found to give perfect sun pictures although taken out of the sensitive bath more than twenty-four hours before they were exposed. These results are of great importance in connection with similar work in the future.

The Amherst College Observatory furnished two of its object glasses (of about seven-inch aperture) for this eclipse, one of which was used here and the other by Professor C. A. Young at his station near Moscow. Professor Pickering, of Harvard College, prepared and sent the sensitive dry plates exactly alike for both, so that the results from the work at the two stations should be strictly comparable. The lens was here mounted in a temporary tube, and the instrument—called a coronagraph—was placed in charge of Lieutenant Southerland, U. S. N., to operate during totality. This is the only eclipse occurring in recent years whose path has so traversed the earth that two civilized countries were near the extreme ends of the line of totality; and the same instruments and dry plates being used both in Japan and Russia, the results of the observations were expected to be of particular value, as showing any rapid changes in the corona.

A single camera, with a 4-inch lens of short focus, was also provided by Professor Pickering for special coronal research, which was operated by Dr. D. B. McCartee, and two 5-inch lenses for a double camera, of which Dr. Ames, U. S. N., had charge. In addition, some small holders with sensitized plates, especially prepared for determining the actinic effect of the coronal light, were provided, the manipulation of which was in the hands of the American Consul-General, Mr. Greathouse, of Yokohama.

A small 4-inch telescope, lent by the Japanese Naval Observatory, was intended to be used by Dr. Holland, the naturalist, and party, in sketching the complexity of detail usually to be found in the corona near the sun's poles. Another telescope of similar dimensions was ready for use in searching for intra-mercurial planets. During totality Mrs. Hitchcock made one or two exposures with a camera, using very sensitive plates, which may have some bearing on the actinic power of light during total eclipses. Mr. K. Acino, a student of practical astronomy at the Imperial University in Tokio, was stationed on a corner of the castle wall to watch, if possible, the approach of the lunar shadow over the paddy fields towards the northwest, and to make as precise observations as possible of the number, size, velocity, and direction of motion of the diffraction shadow bands seen on recent eclipses flitting across the landscape. He was also to note the possible visibility of the corona both before and after the total phase.

It was very pleasant to me that I also should be assigned a part to perform on the important day, and I became much interested in preparing to sketch the faint outer corona, with its long equatorial streamers. The first observation of this sort was attempted by Professor Newcomb at Des Moines in 1869, and again (this time with complete success) at Separation, Wyoming, in 1878. It was tried by Mr. Lockyer at Grenada on the occasion of the eclipse a year ago, but without results, owing to clouds. These streamers are so faint, that the eye, if exposed to the full radiance of the corona, becomes so dazzled that it is unable to discern them. Professor Newcomb's very simple device consists of an occulting disk set up at a distance of about sixty feet from the eye, and of such size as to cover not only the totally eclipsed sun, but also the brighter rays of the inner corona. It was thus found that by neglecting that portion of the corona which numerous observers are always sure to depict, its enormous extension to a distance of several solar diameters in both directions was readily detected. This is regarded by Mr. Lockyer as perhaps the most important observation of a total eclipse which can be made without instrumental aid.

In addition to the work and instruments already mentioned, a series of meteorological observations were made by Mr. M. Nakagawa, Director of the Tokio Observatory, and his assistant, Mr. Shirai, with a full set of instruments for the purpose. Several days before the eclipse, observations were begun hourly of the temperature, air pressure, velocity, and direction of the wind, and other meteorological elements. During the immediate period of the eclipse itself, all these data were recorded with precision every five minutes. These observations were made on a plan precisely similar to that recommended by the congress of European meteorologists, who devised a general scheme for such observations to be made on the occasion of this same eclipse in central and eastern Russia.

Professor Todd also prepared instructions relating to two distinct classes of observations, which he has translated into Japanese, with reference to securing the co-operation of volunteer observers scattered over every part of Japan which would be covered by the lunar shadow. About forty towns, situated just inside of the north and south limits of the total eclipse, received instructions relating to observing the element of the simple duration of totality. A large number of such observations would furnish valuable data with regard to the position and direction of motion of the moon's shadow across this part of the earth. At more than fifty places situated near the central line of the eclipse, instructions were sent for making pencil and other sketches of the outlines of the corona. In the printing and distribution of these instructions, Professor Todd had the co-operation of the Mombusho, or Japanese Department of Education, and of the Geographical Bureau of the Department of the Interior.

Since the arrival of the party in Shirakawa there had been one long rain, lasting three or four days. With this exception the eclipse could have been observed with more or less success on nearly every afternoon. The prevailing winds were southwest, the mornings inclining towards dampness and cloudiness, with hot and clear afternoons. A strong shock of earthquake occurring about a week before, had seemed to change the normal conditions of the climate. The heat increased, the breezes died away entirely or blew fitfully from the north or the east for a few moments, and the foggy mornings turned early into scorching sunshine. On the morning of the eclipse day, Nasusan, the volcano towards the west, was observed to be unusually active, sending up clouds of white steam from one or two apparently new fissures in its sides. The sky was almost entirely clear, and the heat was well-nigh stifling. During the morning a few white clouds flitted across the sky, but everything seemed favorable for success in the afternoon. About one o'clock a small white cloud was noticed, lying close to the summits of the mountains, and before two this had spread upward like an ominous white finger, reaching the zenith. Then a black cloud arose in the east and another in the south. The distant muttering of thunder was heard, and all the clouds, as if in a conspiracy of opposition, joined their forces against the fair blue, which seemed trying to maintain itself. The beginning of the eclipse was entirely hidden, but, shortly after, the stout crescent of the sun shone through a rift in the clouds, and a few photographs were taken. The motion of the clouds was so slow as to be entirely unnoticeable—they seemed merely to accumulate, pile on pile of varying shades of gray; while one clear spot continued in the north most exasperatingly, just beyond any possibility of use. The dread of failure at totality spread among the guests who were watching from the castle, while the pain and tension of expectancy held every one in silence. The astronomer-in-chief alone was calm and philosophic, taking advantage of every possible break in the clouds to catch the narrowing crescent. The darkness increased and became almost sepulchral; the bit of blue above turned steely gray, and it became evident that no drawing of any part of the corona could be made. Totality was announced, and, by two or three jerks, apparently, the darkness fell. The outlines of the mountains and rice fields grew indistinguishable, the clouds turned almost black, and thunder rolled all about and above. In the southeast was a streak of strange, sulphurous yellow, which seemed to give out the only light in the world, except the feeble glimmer of a few lanterns in the town below. A weird and breathless silence came over everything, and for three minutes it seemed that the world must be dead and cold, and turned to ashes. Suddenly a tiny flash of light fell like an instantaneous arrow from the clouds, and all nature came to life. A small rift showed the tiny crescent for an instant, and then the clouds rolled over again heavily, and nothing remained of the eclipse which we could see except a gradually increasing light. The visitors moved away quietly, and for the first time the whole extent of the disappointment came over the observing party.

Philosophy must needs be called strongly into requisition where nothing more tangible than the powers of the air can be held responsible for disaster, and an astronomer is at times a hero. The results of this trip are by no means valueless, but with a clear sky they should have become most especially valuable. To-day the sun is shining heartlessly, the insects are chirping in the grass, anp all nature smiles.

SHIRAKAWA, JAPAN, 1887.

* * *

IT is hard to get off a joke on a Jersey farmer. He continues to look solemn, and remarks, "Jest so."—*Journal.*

WE are told that the art of paper-making has reached a point where a tree may be cut down, made into paper and turned out as a newspaper in thirty-six hours. This accounts for traces of the adze being so plain.—*Yonkers Statesman.*

METRICAL MEASUREMENTS.

BY THOMAS BEDDING.

[Read before the British Photographic Convention at Glasgow.]

I VENTURE to hope that if at this convention, which at the moment of writing bids fair to be attended by a preponderance of, I will not say professional, but business photographers, some little time is devoted to the consideration of a purely commercial matter, in which our non-practicing brethren are as intimately concerned as ourselves, the departure will not be without its advantages, however slight. Harking back for precedents and inspiration to the literature of the Derby meeting, one feels a strong inclination to follow the beaten track instead of prospecting round on one's own account, and it is only the danger of clashing with somebody else that has weighed with me in the choice of so comparatively an out-of-the-way subject. But for these scruples, the exquisite variety of the debutant would infallibly have lured me into the fascinating mazes of orthochromatism; or photography in colors; or the recent and continuous opposition to the employment of ammonia in the developer. As it is, I must dissemble, and leave to some one like the President the congenial task of pulverizing the natural colorists; the potentialities of orthochromatism to Mr. Wellington or Mr. Edwards; and the philosophy of development to its own particular guardian angel, Mr. Pringle. As you will have inferred from the title of the paper, I intend going into figures.

Now from figures, on the authority of the right honorable gentleman the Member for Midlothian, you can get very respectable poetry, not perhaps as musical as Robbie's or as sonorous as Scott's, but still something rhythmical, if only blank verse. I shall not test the truth of this; I only refer to it in order to quiet those of you who are inclined to be disagreeable because my subject threatens to be so dry. Most of you have at some time or another done a British Association week, and you must have noticed how sparsely attended has been, for example, the section in which Professor Cayley affably discoursed pure mathematics, and how crowded that where Sir John Lubbock airily prattled about ants and other interesting little people. I hope I shall not be treated like poor Professor Cayley, for if you will wait to the end, you will find that although I may not have quite realized Mr. Gladstone's enthusiastic belief, you will at least have had plenty of feet and meters, which, as you know, are the very framework of all poetry.

To come to the point: I advocate the adoption of the millimeter instead of the inch or its fraction as the unit of all photographic measurements. Of course it sounds revolutionary, this sweeping condemnation of the dear old linear inch, which probably arrived with Julius Cæsar, and equally, of course, the cultivation of the millimeter in its stead must be a dream; but all changes are revolutionary, and dreams are the motive power of progress. The metrical system of measurements is commonly called French, thus leading the unthinking to suppose that it only flourishes in the land of its origin. Nothing of the sort. In every capital from Madrid to Constantinople, from Christiania to Rome, photographic apparatus and plates are made to metrical scale; the system in fact is European. The United Kingdom alone holds aloof from it, and adheres to the antediluvian inch, just as it adheres to its own indefensible currency and many other anachronisms that make people of a progressive turn of mind very angry with her. But we shall have to come to the millimeter some time, just as by stress of circumstances we shall be compelled to reform our coinage. Manufacturers are the chief sufferers by the present state of things. For example, the maker of dry plates, following the standard scale of sizes, gets his glass cut to inches, halves, and quarters, and, when ordered, to eighths and sixteenths. He quotes for the chief foreign sizes in his price list, but he only supplies them upon indent, for he has not the courage to stock them. It is different with the French, Belgians, and Germans, some of whom, as you may see from the advertisements, make and stock all their goods in English sizes. Somebody may possibly whisper, "What about continental tariffs?" I reply that the superiority of most

British goods over foreign ones is so great, that if they were made and stocked in continental sizes, and systematically pushed, nothing but cent. per cent. *ad valorem* duties would shut them out. Even now, under the present slovenly *régime*, the European sale of some of our products is great, but it might be a hundred times greater. Foreign dealers and photographers desirous of trying our specialties in metrical sizes find that they must wait days, weeks, until they are made—a diversion of which they soon tire. Consequently they patronize native products at a gain of time and a slight loss of quality. Again, suppose a photographer at home wishes to try foreign papers or plates which do not happen to be made in English sizes, his slides and frames will not take them unless adapters and carriers are made, which means a loss of time. From these two illustrations you will see that in consequence of the tenacity with which we cling to the old order of things, commerce and the individual are at an appreciable disadvantage compared with the rest of Europe.

The permanent change from inches to millimeters would involve no trouble at all to makers of glass, cameras, papers, cards, ebonite, porcelain, frames, etc. Some of them, of course, work to the latter scale at present, but, as I have shown, only intermittently; it is a pity they won't keep to the small unit altogether, for then we should get more accurate measurements than we do now. In regard to dry plates, the two sizes in most common use among us are 4¼ x 3¼, or carte de visite, and 6½ x 4¾, or cabinet. On the Continent the two sizes most widely used are 90 x 120 mm., and 130 x 180 mm., which, when reduced to inch measure, are respectively 4¾ x 3½ and 7 x 5⅛, about; in each case a trifle larger than our quarter and half plates. It would be a simple matter, assuming that we cut our plates by metrical scale, to increase the area of the cartes de visite and cabinets to these sizes (4¾ x 3½ and 7 x 5⅛) and in fact the same in regard to all the others, of which the 100 x 130, the 120 x 160, the 180 x 240, the 210 x 270, the 240 x 300, the 300 x 400, respectively approximate to our 5 x 4, double quarters, 9 x 7, 10 x 8, 12 x 10, and 15 x 12. Then our foreign clients could have their requirements supplied at a moment's notice; the photographer at home could try and test continental novelties as easily as he does English ones; and the innocent abroad in want of a dozen plates could drop into the Turkish or Spanish dealer's for them untroubled by any misgivings as to whether English sizes were kept or not. The loss to international trade through our obstinacy must be vast; the inconvenience to professionals and non-professionals alike enormous. The millimeter would remedy all that. I have an idea that a reformed currency would help bring about a change. America has a decimal coinage; let her go a step further and take the metrical system under her wing, and she will be able to swamp the European markets with photographic goods as easily as patent medicines. Some of us happily employ the metrical system habitually—gunmakers, to wit, for barrel bores; accuracy in photographic measurements is just as important. A badly cut plate is a common curse, so is an ill-fitting slide, both faults, I believe, may be traced to over-generous marginal allowances.

In suggesting the substitution of the millimeter for the inch and its fraction, I am in effect advocating a total reformation of present sizes, but this sounds more iconoclastic than it really is. Take a meter measure, place it alongside a two-foot rule, and compare the ten or twelve principal continental sizes with their near equivalents in inches, and you will see that it merely means in some cases a slight increase, in others a small decrease, in our own sizes. The whole matter is innocent of difficulty, and everybody would benefit by the change. The inch is an inchular—I mean insular—prejudice. Some day, when Sir Edward Watkin has tacked Dover on to Calais, and a tunnel connects Scotland with the Emerald Isle, we shall become to all intents and purposes a bit of Europe; then the metrical system will be forced upon us. We are much in the position of the late Mr. Mahomet; other nations won't adopt our system, so we must adopt theirs if we wish to be in a line with them. By cutting our glass and papers and wood-work to millimetrical scale, we shall have adopted the only philosophical and international system of measurement extant; insure exactitude, which we rarely get now; save time and make money; and facilitate a better intercourse between antagonistic peoples who, as things look at this moment, are too fond of snarling and quarreling over much smaller things than over a millimeter. Who knows but that the conversion of this country generally to the metrical system may not be the means of smoothing away the too easily provoked susceptibilities of the Gaul, the Russ, and the Teuton, and of promoting lasting concord between ourselves and our neighbors? I make the Peace Society a Jubilee present of the idea.

I have designedly treated my subject in as light a vein as possible for two reasons; first, because it is possible that the majority of my listeners may be too tired to appreciate a strictly academical treatise; second, because there is no earthly reason why even the heaviest and most dry-as-dust topic should not be approached in an amiable frame of mind.

PHOTOGRAPHY FROM ONE POINT OF VIEW.

BY EDWARD DUNMORE.

[Read before the British Photographic Convention at Glasgow.]

It is usually the case when allusion is made to photography to speak of it in its dual name as an art-science. Now, for the purposes of this paper, we will ignore the science definition, retaining only the art, thus looking on the scientific side of the matter very much in the same way as a painter or engraver looks on his colors and appliances. I am somewhat doubtful if, by thus invariably linking together of art and science in name, we have not produced a bad effect on photography as an art. Whether or no it has had considerable influence in keeping its artistic qualities suppressed I am not prepared to say. At any rate, photographs are, and always have been, looked upon by many as merely mechanical productions, incapable of expressing a thought, suitable only for producing literally just the matter-of-fact subjects that may be presented to the lens. This is, in my opinion, undoubtedly an erroneous idea. That the photographer has, if he be clever in his profession, the power of imbuing his work with his own individuality in a very marked manner, there is not the slightest doubt. Who could fail to see the man in the works of Rejlander, Robinson, Hubbard, Diston, and others? This fact is alone sufficient to prove that a camera and lens, skillfully used, is something more than a mere mechanical copying machine. We see by actual work that picture-making by photography is not only possible, but has been actually accomplished. I speak here in the past tense, by reason of having in my mind the photographs that impressed me most as pictures, and which, I have no doubt, many here will associate with the names of the artists I have enumerated. Photography is not easy, by any means, to work as a picture-making process. The ease with which an image is obtained is illusory, pictures and images not being synonymous or interchangeable terms. It reminds one of learning the German language, which at first sight has many of the words looking so very English that we jump to the conclusion its acquirement is very easy, and not until we have dipped into it we find out our mistake, and that the apparent ease is but delusive. The gay and airy manner with which we thought of mastering it is soon dissipated, instead of which we are involved in a struggle with words that is a formidable and unexpected task to the greater portion of those who make the attempt. It is so very much more easy to blame the process when we fail in our attempt at picture-making than to use it. It is no reason because there are undoubted difficulties in the way that we should fall back on that very poor excuse for not making good pictures. Certainly not. It has been satisfactorily proved that pictures in every sense of the term can be made by it, and by patience and perseverance the difficulties must be overcome; the more of them the greater the victory. The well-worn aphorism that "the bad workman blames his tools" is especially applicable to photographers and photography. We know the tools are generally good, and it is our own fault if we do not make good use of them. I sometimes think they may be too good; and when we see such a display of French polish and ornamental brass-work, and the very, very small results, it makes one think perhaps if there were less thought for the apparatus and more for the picture it would not be a bad thing. But a high finish being expected, makers have to conform to the general wish.

It is very difficult to satisfactorily define "art," so general is the application of the word in season and out of season. If a tradesman gets particularly ugly patterns in goods they are dubbed "art" productions. The elasticity of the term meets all requirements, from a picture to a funeral. So much, then, for the application of the term "art," upon which I will not further enlarge. Then we get "fine art," even a more debatable term than the other, but not quite so universal in its application. It is, however, decidedly more provocative of wordy conflicts. As to the precise meaning of the term opinions differ; our purpose will be served if we define it as anything beautiful, of a more decorative than useful nature, under which head a good artistic photograph may be fairly classed. A photographic picture, then, is an application of the process of photography to represent nature in conformance with the rules that masters in the art of painting and draughtsmanship have laid down as applicable to their particular branches, especially in composition and *chiaro oscuro.* For the present, at any rate, laws relating to the treatment of color do not particularly concern us, except when color takes the place of light and shade, and has to be considered in that connection.

Artistic photographic pictures may be classed under three heads: land- or seascapes, genre, and still life. Photographs may all be fairly included under one or other of these headings. The landscape into which figures are introduced, if the figures should be so composed as to tell some tale by which the interest will be fairly divided between figure and landscape, has given rise to a variety of opinion as to under which head such pictures should be classed. A compromise has been made by denominating them as "landscape with figures," a style which Birket Foster's water colors has so admirably exemplified. In these productions we have action and interest in the arrangement of the figures, yet without destroying that of the landscape, which, by its freshness and suitability claims almost equal attention. In the composition of pictures of this kind, to which undoubtedly photography lends itself, the proportionate size of the figure to the landscape entirely decides the class to which it shall belong. If figures are introduced in the foregrounds and treated in an important manner we should scarcely call that picture a landscape, but if placed in or beyond the middle distance they become subsidiary to the landscape, and the picture may be fairly called a landscape with figures, or the figures may be dropped in the title altogether. There are few, if any, landscapes the interest in which is not increased by the addition of figures. Particular attention should therefore be given to their position and arrangement, for awkwardly posed figures in the wrong place will ruin any landscape, however beautiful. The foreground in all landscapes should receive very careful attention, for upon this part of the picture much of the general effect of the work depends; it being close to the eye and upon a larger scale than the rest at once challenges attention. Its arrangement and detail should therefore be most carefully looked to. Many hold, I cannot help thinking, very erroneous ideas as to what constitutes a picture, a "good photograph" being considered synonymous with a "good picture," when, to my idea, they are as far apart as the two poles. However, this is not a suitable opportunity to enter into a long argument as to what constitutes a picture, suffice it to give a few examples of what do not. A photograph of beautiful clouds, although pleasant to look upon, scarcely constitutes a picture in itself, but add the merest strip of landscape that has pictorial interest and it at once becomes one. A picture must be a combination of several things, each of interest in itself, otherwise it remains a mere photograph; it may be an excellent representation of the object, but without any claims to pictorial honor. This is a rock on which many get stranded, having the idea that a good photograph of any particular object, no matter what it is, is of necessity a good picture. The sooner this idea is exploded the better for everybody.

(*To be continued.*)

PICTURE-MAKING.

BY DAVID PRATT.

[Read before the British Photographic Convention at Glasgow.]

Much that is written on this subject is without value to the inquiring amateur, because, while it goes round about it, it seldom touches to give practical guidance.

This comes from a general impression that a born artist only knows what elements make a picture, and he who is not thus naturally gifted will only make a picture by chance. It is true that artistic intuition is the power in picture-making, and he who is so gifted, when viewing nature, selects by that inborn power what pleases himself and gives pleasure to others. In other words, he is a poet, and when he gives expression he strikes a chord wherever the poetic exists.

This is accepted; but it is not generally admitted that there are also laws in picture-making that may be defined, and the disregard of which makes a pleasurable picture impossible.

We are told that the old masters had a code of laws which got buried with them, but their works remain to prove the laws they recognized. These laws existed before them, and do exist now, superior to our constituted appreciation of them. These regulate picture-making in each of its branches—landscape, sea piece, figures in landscape, figures, color.

If the mention of a few of these laws will start inquiry, this short paper will not be in vain. 1. The chief object away from the center. 2. The greatest light against the greatest dark, or the reverse. 3. One-third light and two-thirds dark, or the reverse. 4. The odd set of chords, three or five. 5. If three chords of light or shade be adopted, the one should not be equal to the other. 6. The unequal line, or curve of beauty. 7. The odd number of figures. 8. One prominent harmony of color, or contrast in light and shade.

Let these suffice for the present purpose. A successful picture may be made by the intuitive power, although these laws have not been acknowledged; but we maintain fewer mistakes will be made by a full recognition of them.

While chemical and mechanical manipulation is making great strides, and we are seeing beautiful workmanship on every hand by the discovery and recognition of laws regulating these sciences, it only becomes us to formulate the laws of picture-making by a careful study of them.

MODERN FILM PHOTOGRAPHY.

BY BUCHANAN WOLLASTON.

[Read before the British Photographic Convention at Glasgow.]

In introducing the subject of modern film photography to the notice of the members of convention, I do so with some diffidence, for I see many gentlemen in the room—old masters of our art-science—to whom any remarks of a poor "junior" in the profession like myself must appear mere foolishness. To them I offer my apologies, in the hope that they will, for the sake of those not yet having attained their majority, bear with me a short space of time in my endeavors to educate the more inexperienced of the brethren; and if perchance I may lead some of the "old birds" to a study of this most fascinating branch of the art, it will of course be the more gratifying to me.

It will be my aim in this paper to avoid empiricism on the one hand, as leading simply to photographic quackery; and, on the other hand, I do not wish to pose as a dogmatist, because however much I may know (or think I know) about gelatino-bromide films, there will be those coming after me who are sure to know more, and the greater the number of workers and experimenters the more chance of arriving at the nearest approach to perfection allowed to us mortals to attain to.

I do not propose to tire you with a history of film photography from its first inception, for to the student it is a matter of but little difficulty to arrive at all necessary facts in connection therewith; and I take it that most of us, more especially on such an occasion as this great gathering, would feel inclined to say, "Let us to business," or "D——n the theory!"

It has been said that film negatives will never become popular with the professional landscapist, but I submit that this is only partly true. There are those gentlemen who will not look into the merits of any new invention. "It is too much trouble," say they, "and we don't want anything better than what we have got." Possibly they may have a nice dog-cart in which to convey their *impedimenta*, or a muscular operator who has to bear the burden of the paraphernalia, while the "guv'nor" pockets the results of his exertions. Others say their printer would spoil every negative in no time, and so on.

There are, however, a large section of the photographic community whose pride is to do the best work without assistance, or with as little as may be, and it is to such men that the advantages of film photography specially appeal, as well as to the amateur.

The advantages are briefly as follows: 1. Portability. 2. Freedom from breakage. 3. Absence of halation. 4. Ease of manipulation. 5. Suitability for carbon printing, and the various photo-mechanical processes involving a reversed image.

First.—Portability may be elaborated into (*a*) Storage space: 250 film negatives occupy a space, under slight pressure, of a little more than one inch. A similar number of glass negatives, of average thickness, take up about two feet four inches. (*b*) Weight: Two whole plate glass negatives taken at random from a box within six feet of me while I write, weigh fourteen and three-quarter ounces nearly, while two films of same size, also taken at random from an envelope upon the table, weigh exactly five and a half drams avoirdupois, or, stated in grains, 6,452 apothecary, as against 151.5 apothecary = 42.7 times as much approximately. Surely this is of great importance to those who place their printing out, to the traveler, tourist, or outdoor operator.

Second.—Freedom from breakage. What an immense number of valuable negatives are smashed annually, either by "Slipping through my fingers, sir," or in the printing frame. With films we enjoy complete immunity from these dangers. Further, our negatives may be readily cut with scissors or with a cutting-glass to any desired size and shape without the risk inseparable from the use of the diamond even by skilled hands.

Third.—Freedom from halation. This is, perhaps, one of the greatest advantages possessed by films *versus* glass, and to those who are engaged in taking pictures of interiors it will specially commend itself. I have already shown negatives before the Photographic Society of Great Britain in which the delicate tracery of windows and the finest twigs of trees are depicted with almost microscopical sharpness, and these under very prolonged exposure. A slight blurring is noticeable in some instances, which I attribute entirely to diffused light in the camera, not to halation proper.

Fourth.—Ease of manipulation. It has been said to me by many of my pupils in photography, before commencing a set of lessons, "No, I don't think I will go in for paper negatives (or film), it seems so difficult." Now I have made it my study to find out how this prevalent notion of difficulty has arisen, and the result of my investigations leads me to the conviction that in almost every instance either the gentlemen themselves, or some amateur tyro whom they know, has attempted paper or film negatives, vainly imagining that they would behave exactly like glass dry plates. To them I say: "Between film photography and glass dry plate photography there is almost as much difference as between dry plate and wet collodion work, and you must unlearn a good deal of one before you will succeed with the other." It is then quite wonderful how the difficulty notion slowly but surely gives way before the charm of developing a whole spool of twenty-four exposures in one, two, or three batches, in little more solution than would suffice for three dry plates; and before many days my pupils are led to make such remarks as the following: "Why, the whole thing is as easy as toning a lot of prints;" or, "I can't think why So-and-so made such a mess of his negatives!" There are, of course, those whose "fingers are all thumbs," or who lack common-sense. They had better confine themselves to spoiling dry plate negatives rather than bring discredit upon one of the most beautiful processes of our times by their bungling.

The operation of squeegeeing upon collodionized glass, stripping by means of hot water, attaching the permanent skin, etc., are so entirely new to the average worker that they favor the idea of difficulty; and when one or two negatives only have to be finished, the preparations necessary may be somewhat out of proportion to the advantages, but in making, say, one or two dozen negatives in a batch, the operations subsequent upon development become so methodical and mechanical, and are performed with such regularity and precision, as to make one wonder wherein lies the difficulty so often complained of.

Fifth.—Suitability for processes involving a reversed image. Film negatives being printable from either side, it is sufficiently obvious that they are eminently well suited to the requirements of the photo-mechanical printer, the carbon printer (by single transfer), and the callotypist; and as there is but little difficulty in obtaining absolute opacity in bright light with as perfect clearness of shadows as possible, I fancy that engineers, topographers, and others, will ere long open their eyes to this new power placed in their hands. How delightful to have a film negative of large size (say 40 x 36), or a set of such negatives, stored on wooden rollers, ready when required to be used for the reproduction, by any process, of an unlimited number of copies of an original, either right or reversed. Ye manufacturers of films look to this! There are many other advantages which have been mentioned from time to time by various writers to the photographic papers, such as greater rapidity of a given emulsion spread upon paper rather than glass; cost, not forgetting the non-requirement of extraneous assistance; decreased postage and carriage, and non-breakage; the possibility of taking a second exposure of any subject, when at a distance from home and doubtful as to exposure, etc., without running short of plates, thereby saving time, temper and trouble; the absence of dust on finished pictures, when used on spool in a roller slide; the facility of changing spools where no dark room is available at the sacrifice of one or two exposures only; and so forth.

I now pass on to the manipulation of the films, prefacing my remarks by observing that although excellent pictures have been, are still, and will be, produced on films cut to standard sizes in ordinary dark slides, and prepared by many different methods of manufacture—some very ingeniously held "taut" by mechanical holders, others kept flat by means of an adhesive material—the real utility of, and the greatest advantage arising from, film photography can only be truly appreciated by the possessor of a roller slide of some design, charged with a spool of sensitive material of sufficient length for twenty-four, forty-eight, or more exposures, to be subsequently cut into the required sizes for development.

Be the roller slide of what make it may, and the film, whether permanently attached to a paper backing for rendering translucent by oil, vaseline, or varnish after drying, or a "stripper," or any film capable of being made in length, there are certain rules to be followed and certain snares to be avoided which it will be my object to briefly notice.

The method of inserting the spools, in whatever form of roller slide the practitioner selects, is a matter in which the inventor of that particular slide is likely to be the best instructor; but let me caution the beginner to be careful not to finger the spool of paper more than necessary, and to see that the first exposure is strained *flat, i.e.*, without diagonal creases, which I have known follow through a whole spool, and either spoil or considerably mar every picture thereon.

In my own practice I have found films, *cœteris paribus*, more rapid than glass plates, but upon this point I have met with the most conflicting evidence, some experimenters positively asserting that they are slow, others that they are much more rapid than any other form of gelatino-bromide. Now my impression is that with a given emulsion rapidity is favored by spreading it upon paper, for three reasons: (1) That in drying emulsion upon paper no crushing of particles takes place on the lower strata; (2) that no blurring of light into shadow takes place; and (3) that the developer, attacking the light-affected parts on both sides, brings about a more complete reduction of the haloids. But a great secret lies in development, and I shall endeavor to show you how this can be accomplished with success.

Two golden rules.—Do not over-expose. Push the development further than seems necessary.

Without troubling you with experimental formulas, I will give you at once the developer I now use and swear by, but if any member will show me a better I will abandon my pet at once upon conviction. My formula stands thus:

No. 1.

Soda sulphite, pure	8 ounces.
Hot distilled water	40 fluid ounces.

Let cool to 60 degrees F., and render just sour with citric acid. Test with litmus. Pour on to 1 ounce (437½ grains) pyro.

No. 2.

Soda carbonate, pure	4 ounces.
Potash " "	1 ounce.
Distilled water	40 fluid ounces.

Mix equal parts No. 1 and No. 2 for normal exposures.

Always have a ten per cent. solution of bromide at hand for emergencies, and use if great opacity is desired, but as a rule no restrainer seems necessary.

It is sometimes desirable to proceed with caution, and add a portion only of the No. 2 solution at the outset, and when time is not of much importance I prefer to further dilute the mixed developer with one-third to one-half its bulk of water.

With the above developer and plenty of time—always given a reasonable amount of brains, as Colonel Stuart Wortley once remarked—uniformly excellent negatives can be produced with almost absolute certainty, and upon any of the leading films now in the market; but I must frankly admit that I have seen negatives produced by one of our much respected members with an ammonia developer fully equal in quality and pluck to the best by my method, but then it is the man, not the developer. In my hands ammonia falls far short of the fixed alkalies in uniformity of results.

It is not within the scope of this paper to give detailed instruction in finishing either paper or film negatives, nor is it my intention to recommend any particular brand, or special roller slide, but I will tell any member who wishes to know (quite privately of course) where lies my love. And if my remarks may induce any gentleman to try filmography and he gets into difficulties, let him write to me and I will try and help him over the stile.

A VETERAN IN PHOTOGRAPHY RETIRES.

After over forty years of active photographic life, Abraham Bogardus will retire from active business, and offers his studio on 42d street for sale.

Beginning with the earliest days of the daguerreotppe, in a studio at the corner of Barclay and Greenwich streets, after fifteen years he moved to a position on Broadway and Franklin street; thence he went to 27th street, 18th street, and finally to 42d street. He probably photographed more distinguished men than any other American photographer. The portrait of General Hancock was so good that it was used to engrave from to place upon the new two-dollar bills.

"I feel that I have been in business long enough," said Mr. Bogardus, "and I'm anxious to be free from the cares of business. Why, I've been engaged in photography so long that I'm afraid that I'll break out all over with pictures, just as the old lady who had lived so long among the clams on Long Island that her chest rose and fell with the tide."

Mr. Bogardus has been popular in his professional and social relations, and his departure from his old business will be a matter of general regret.

OUR ILLUSTRATION.

With this issue of the Bulletin we give our subscribers an excellent study of a head by the well known Boston artist Conly. This is one of the handsomest studies of this character that we have seen for some time, and is alike a credit to the artist and the Photo-gravure Company of New York, who made the plate and printed the pictures for our illustration. The negative was made on the Stanley dry plate, and is untouched. The lens used was one of Dallmeyer's well known make. The picture is well worth the attention of every photographer who has any ambition to produce artistic work.

TO WHOM BELONGS THE NEGATIVE?

Amenia, N. Y., November 16, 1887.

To the Editors of the Bulletin.

As you ask the opinion of the fraternity as "to whom does the negative belong?" permit me, as one of that class, to give my humble opinion in as few words as possible.

Who is the rightful owner? I should say the proprietor of the studio. Is he not the owner of all materials (the sun and air excepted), and is it not his means and ability that are the producers? Is the subject any more an owner than the owner of a landscape or building?

It has always been customary to charge extra for a negative in case the party wished it, but even then it is parted with reluctantly for many good reasons. We all know that it may be put to bad as well as harmless use, and if for no other reason I would say, as a rule (circumstances altering cases) the negative should remain in the photographer's hands, as well as for his own protection as for any future benefit he may derive from it. Respectfully, C. H. Hall.

BACK NUMBERS OF THE BULLETIN WANTED.

The following back numbers of the Bulletin are needed to fill out volumes of our subscribers for binding. We shall be pleased to receive copies of these, for which we will pay full price if they are complete and in good order.

	No.		No.
1885.—Jan. 24	2	1886.—April 9	7
April 11	7	Nov. 13	21
May 9	9	1887.—Jan. 8	1
Nov. 14	21	Feb. 10	3

I consider each issue of the Bulletin worth the price of a year's subscription. George B. Petty.

It seems strange, but at this season of the year people's thoughts turn to spring—the door spring.—*Boston Bulletin.*

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, NOVEMBER 1, 1887.

President NEWTON in the chair.

The *Secretary* reported the receipt of the regular numbers of Anthony's BULLETIN and the *Photographic Times*.

The Chairman of the Executive Committee announced that the subject selected for the evening was "Faces and Facial Expression," a charcoal talk, by J. Wells Champney. For the next regular meeting, December 6th, no subject as yet had been positively decided upon, though it was expected it would be "The Literature of Photography." He also announced that there would be an informal meeting of the section Wednesday evening, November 16th, and that all who were interested in practical photography were cordially invited to be present, especially any one who desired aid in solving photographic problems and wished to avail himself of familiar talks concerning the thousand and one difficulties every practical photographer must needs meet with in his efforts to reach the highest excellence. That on these informal or social occasions any one was free to introduce any special branch of the art in which he was the most deeply interested, and which often, perhaps, gave him the greatest amount of perplexity, and thus avail himself of the experience of others in matters most vital to his success.

It was believed by some of the most prominent members of the section that much could be done in these conference meetings that could not be accomplished in formal popular discourses, and for this reason it had been resolved to have these experience meetings on the third Wednesday evening in each month during the present winter.

The remaining portion of the regular order of business was omitted, and Mr. J. Wells Champney was introduced. In his preface he stated that it was not his intention to attempt more than to simply entertain his auditors with outline sketches of "Faces and Facial Expression," and make such suggestions as might perhaps help the photographer in his every day work.

Without further prelude he at once commenced drawing with colored chalks on sheets of sketching paper suited to his purpose, the profile of an infant, describing at the same time the peculiarities of the lines of the head and face at this infantile stage, and how the lines or curves in both sexes resemble each other, and how they differed. He then rapidly passed to the chief characteristics in the lines of youth, manhood and old age in both sexes, and as each of these were portrayed, the artist was greeted with hearty applause.

The rapidity and accuracy with which he sketched these several stages of life, their beauty or deformity, proved beyond all doubt his scholarship in art.

In his oral comments, while rapidly sketching, there was a vein of humor and pleasantry that obliged him to look no further than to the large audience before him to copy facial expression indicative of every phase of admiration and delight. Mr. Champney, after thus entertaining the audience for about one hour and a half, received a unanimous vote of thanks for his valuable and artistic contribution to the section.

It was then announced that Mr. A. D. Fisk, who had skillfully managed the oxy-hydrogen light to properly illuminate the work of the artist, had a few lantern slides of public interest, which if the audience desired he would exhibit. This announcement instantly restored quiet in the house, and Mr. Fisk proceeded at once to briefly explain each picture, comprising scenes from the Sandwich Islands of the eruption of Kilauea, with the lava flow; the feather cloak, more valuable than the crown jewels, having taken nine generations to complete it; the residence of the king; one of the mission churches, each native, including the king, contributing a stone towards its construction; the battle-field of General Custer's last fight, showing the skirmish line, the monument, and stakes placed over the spots where the soldiers fell; portraits of Sitting Bull and daughter; Gaul, the chief who led the Sioux against Custer's forces, with Rain in the Face, who it is reported cut out the heart of Custer's brother and ate it; also some Indian scenes, showing the methods of torture practiced upon their captives, and the sun dance, where the Indians allow themselves to be cut and hung up until the skin is torn from the body, proving their bravery and endurance.

One of the best examples of instantaneous photography was the picture of a kicking horse, showing what photography is capable of when properly handled.

Mr. Fisk closed the lantern exhibit with a few pieces of statuary and Mexican scenes, and after receiving the hearty thanks of the section, the meeting adjourned.

◆

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, OCTOBER 11, 1887.

(*Continued.*)

DR. KNAGGS—Yes, sir; you can get any time you like from a second upwards.

MR. BELLSMITH then exhibited a camera, and said in substance as follows:

The first camera that I shall exhibit is the Eastman interchangeable camera. In the first place we claim that this camera has every improvement that can possibly be desired, and more improvements than any other in the market. It has the double sliding front, the double swing and reversible back, and it is interchangeable; that is, if you have a 5 x 8 box and you want an 8 x 10, we enable you to get one by paying one-half the price; you simply get an 8 x 10 back and bellows, which can be attached to the same front which is on your 5 x 8 camera. The bellows detaches from the front, and to this part [indicating] by unscrewing this part here [indicating] you can attach the 8 x 10 instead, thus giving you two sizes of camera for one and one-half the price. The part that holds the ground glass is a peculiar thing. Both of these springs are released at once by simply turning the thumb-screw, and it makes every screw lock. The reversible back is an old principle, and of course is one of the best, also the double slide in front. One of the neatest things about it is the spring key; one turn of that screw releases the spring entirely, so that you can turn your back any way you wish. It is simply a tongue passing between two clamps, and immediately the screw is released it releases that tongue.

MR. FISK—I had occasion to order for a gentleman one of these cameras, 6½ x 8½, of the same size as this, and he received it with the idea that it was to be made interchangeable, as the camera designated. An idea struck him at Newport that he would like to get the yachts as they were passing of good size, and consequently he ordered a 10 x 12 back to be put on that front. It struck me at first when the order came that it would be impossible for him to use a 10 x 12 back on a 6½ x 8½ camera for two reasons: First, that the bed was too narrow; and second, there was not draw enough on the original focus. So that if anybody orders a camera with the idea of getting a larger one, I should advise them to get the latter first, then you have the long bed. To begin with, you have a larger and wider bed, which will give you a better foundation for your plates; and any camera could be made to do work without a binding screw on the focusing attachment. You take that camera, or any one that focuses front and back with simply a rack and pinion, without any stop, and carry it on a yachting expedition, you will find out that you will have unsatisfactory results. I made some 10 x 12 pictures, and I found that I had shifted back through my holding it up in this way [indicating] about three-eighths of an inch out of focus. These are suggestions I make for the benefit of the Eastman Dry Plate Company.

MR. BELLSMITH—That rack and pinion in there is arranged different from any you ever saw. There is a spring on the inside there that gives you tension and it takes considerable pressure.

MR. FISK—It is a known fact that in making pictures in confined positions it is absolutely necessary to have a very large rise and fall of the front. The front of this camera is low enough when the camera is extended to an ordinary degree of length, but when you reduce it back to get a short focus lens on it is impossible to raise the front because of the cone bellows becoming entangled. If you are making pictures from confined positions in the city, sometimes on the top of a very high building, and you want to get the base of another high building, it is necessary to carry the lens away up. Unless you tilt the camera (and in some instances it is impossible to do so) you can't do it. A camera ought to be made to-day so that we have more length of bellows in height and width.

Mr. BELLSMITH—Regarding what Mr. Fisk has called attention to, I want to say that in making the picture that I have developed here to-night of the Capitol of Connecticut, it is one of the highest buildings in this country, and the ground receding from the building is considerably lower than the ground around the building. I was standing probably six or eight feet lower than the base of the foundation, and at the same time you will find that the Goddess of Liberty, or the Goddess of Justice, which is on top of the building there is cut so sharp that you can count the feathers in her wing pretty nearly, and I had no trouble with the bellows obstructing my plate at all.

Mr. FISK—That is perfectly true when you are looking up; but when you are looking down, how is it then?

Mr. BELLSMITH—When you are looking down it is entirely different. I have used this camera in Florida, Maine, and Mexico, and I have never yet met with any trouble of that kind, or even with the rack and pinion.

Mr. FISK—There is no doubt at all in my mind but what America can build better yachts, or at least faster ones than England; but certainly England can teach us how to make cameras. Here is a 6½ x 8½ camera, one of the latest importations from London, and it has a bellows of 20 inches draw, and yet shuts up in about 2½ inches. There are two or three principal features connected with it that I would like to call attention to. It drops down and the front recesses into the bed; the front comes forward, and the bellows is brought forward in this way [indicating]. Of course it has the rack and pinion movement. The principal feature is this, that in using that camera, or in using a short focus lens on it, it would be impossible almost when that [indicating] is racked back as far as it will go, to do it, because the front don't go back far enough; and you will notice in all the American cameras where the front focus is used that they have a supplemental bed that has to be taken off. These two little nuts are unscrewed, and the whole back is carried forward. It uses a sliding carriage, and the lateral swing is also obtained by that movement. This is the principle that I wish to show in that camera, it being one of the latest.

A *Member*—What do they cost?

Mr. FISK—They cost somewhere in the neighborhood of $50.

Dr. PIFFARD—Have you any 5 x 7?

Mr. FISK—No, sir; that is the only camera that has come over to this country, and I had it brought over simply from the fact that it accomplished what I have been looking for for a long while; that is, to get something that would carry the back forward for short work by quick focusing and having to do it without unscrewing and screwing up again. It is made by Park, of London. There are no holders that come with it, because the English holders are an abomination.

The *President*—I have to thank the gentlemen for their entertainment this evening, and I want to say to them that we are under many obligations for all this study and for all they have said and done. We have taken their time and it has been considerable trouble to them. I am grateful to the members of the society for their attention, and am sorry to have kept you so late, but I did not expect Mr. Bellsmith would be here. Personally I am glad to have met him, and we thank him for his participation in the evening's entertainment.

Motion carried.

On motion, meeting adjourned.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

THE regular meeting of the St. Louis Association of Amateur Photographers, November 7, 1887, was called to order by the *President*.

Applications for active membership were received from Messrs. C. L. Hammerstein, A. J. Eschrich, W. M. Jaccard, C. M. Seaman, and C. W. Melcher, and referred to the Membership Committee for investigation.

Mr. Dunn's proposition to reduce the dues of active members, of which notice had been given at the meeting of September 5th, was taken up for action. After a full discussion it was unanimously agreed to fix them at $6 per year, payable quarterly in advance.

On motion the *Secretary* was instructed to have the Constitution and By-Laws printed for the use of the association.

On motion of Father Charropin, ordered that a book be purchased for the purpose of recording the names of such members as may take out periodicals for consultation, the limit of time for such withdrawal being fixed at two weeks.

Mr. BLATTNER read a very interesting paper on "Wet Plate Transparencies," illustrating it fully by specimens made both by contact and copying in the camera. After the adjournment of the meeting the specimens were shown by the lantern on the screen, and proved conclusively that contact work can be done by the wet process which is not at all inferior in sharpness of definition to that done with dry plates. A vote of thanks was unanimously passed to Mr. Blattner for his interesting paper.

Mr. H. B. ALEXANDER, Chairman of the Lantern Slide Committee, read a letter from Mr. Richard H. Lawrence, of New York, announcing the arrangements for the interchange of lantern slides for the winter of 1887-88, and requesting that our slides be ready for shipment not later than December 1st. The members were therefore requested to have their slides in Mr. Alexander's hands not later than November 20th.

Messrs. H. B. Alexander and H. M. Holland were selected to prepare papers for the December meeting of the association.

The *Secretary* was directed to obtain a suitable book in which papers read before the association may be copied.

Notice was given that Mr. Emil Boehl, of Messrs. Boehl & Koenig, would attend the next meeting, for the purpose of making practical suggestions on photographic matters.

There being no further business, the association adjourned until Monday, November 21st, at 8 P.M.

After adjournment, President Bain made an exposure of a plate, the subject being the members of the association who were present, and the light, gun-cotton and magnesium powder. Owing to the carelessness of one of the members who assisted him, one of the two lights was not properly placed and the negative proved a failure. Another attempt will be made and will no doubt prove successful.

W. M. BUTLER,
Secretary.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

AT a meeting of the Photographic Section of the Academy of Science on November 15th, Mr. G. H. CROUGHTON was elected *President;* Mr. J. I. HAGREEN, *Vice-President;* and Mr. M. B. PUNNETT, *Secretary*.

Mr. H. W. Mathews gave an exhibition of the use of magnesium powder as a source of light for instantaneous photographs, with fair results. They would have been better were it not for the strangeness of the conditions.

The section is booming and a fine exhibition of photos is expected at the coming December soiree; and arrangements have been made to give lantern exhibitions, also prize competitive print meetings, during the winter.

At our previous meeting Mr. Croughton gave a fine demonstration of the manner of developing lantern slides.

All communications should be addressed to the *Secretary*, 30 Magnee street, Rochester, N. Y.

MILTON B. PUNNETT.
Secretary.

THE BOSTON CAMERA CLUB.

A MEETING of the club was held at the rooms on November 17th.

As this was not a business meeting, the evening was devoted to listening to a "talk" on Sweden and Norway, which was given by Mr. Alban Audren, and beautifully illustrated with lantern slide views made by Mr. Audren on a recent visit.

A special meeting of the club is called for the 23d to select from slides offered the 100 for the interchange.

E. F. WILDER,
Secretary.

ON THE ACTION OF DIFFERENT COLORING MATTERS UPON THE BEHAVIOR OF BROMIDE OF SILVER IN THE SOLAR SPECTRUM.

BY DR. J. M. EDER.

(*From Original Memoir of the Author.*)

(*Continued from page* 315.)

Diazoresorufin.—This handsome fluorescent red coloring matter shows its sensitizing action for green, yellow, and with longer action for orange. This property has been observed by Messrs. Mallmann and Scolik while photographing color-tables. This coloring matter has not yet been spectrographically examined. I used it as a bath, 1 to 15,000 to 1 to 20,000, with a small addition of ammonia. The bromide of silver gelatine colored with it is sensitive from E to D ¾ C. This distinct band of sensitizing generally admits two maxima, one in green ($\lambda = 560$) the other in orange ($\lambda = 614$). At longer exposure a weaker action appears towards B. The resemblance of the sensitizing to the absorption of this coloring matter, in which latter also appears two bands in green and yellow, deserves consideration.

The circumstance is further interesting, that bleu coupier shows a similar action upon bromide of silver gelatine. By hasty observation the spectrum pictures upon bromide of silver which is colored with diazoresorufin and those colored with bleu coupier seem to be very much alike, but a careful examination shows their difference. (See below.)

Azoblue.—Under the name of azoblue the most different kinds of color are put into the market, which in their production, composition and properties have not the slightest resemblance.

Azoblue from the factory in Elberfeld is a violet coloring matter, produced by the action of tetrazoditolyl upon α naphthol-sulpho acid. (See above.) With ammonia it becomes more of a reddish color; but it also sensitizes without ammonia. This azoblue increases the sensitiveness for green and yellow; at longer exposure the action extends to red. Azoblue after Nietzky acts upon bromide of silver similarly,[*] and appears to possess no particular advantages as a sensitizer. Azoblue from Meister, Lucius & Brüning increases the relative sensitiveness for green and yellow, but less for red.

It would require too much space to discuss the little differences in the behavior of the bromide of silver gelatine colored with the several kinds of azoblue towards the solar spectrum, no particular theoretical or practical interest existing therein.

Indophenol, Anthracene Blue, Naphthol Green.—These coloring matters are more or less weak sensitizers for the less refractive rays. Indophenol in comparison with blue coupier and cyanin acts very badly. Naphthol green (from the aniline color factory of Mr. Gans, of Frankfort-on-the-Maine) shows a sensitizing power just as little as indophenol. Anthracene blue (with ammonia) gives a little better action in red.

On the Action of Potassium Bromide upon Colored (Sensitized) Bromide of Silver.—The presence of bromide of potassium, or any other soluble bromide, retards, as is well known, in the photographic bromide of silver gelatine films, the production or appearance of the picture, but favors the purity and clearness of the same at the expense of light-sensitiveness. Pure bromide of silver gelatine (without color addition) suffers particularly in the sensitiveness against those rays, towards which it is anyhow less light-sensitive, that is towards the less refractive rays (green, yellow, red) and the outer ultra-violet rays. In consequence thereof the spectrum picture will appear shortened both ways, and the maximum actions appear particularly distinct.

Quite similar is bromide of silver which has been sensitized with coloring matters. If a small quantity of potassium bromide is added to the coloring-matter baths (eosine, erythrosin, cyanin, etc.), and the bromide of silver plates are bathed and then tested in the spectrograph upon their color-sensitiveness, it will be observed that the sensitizing photographic action is reduced. The parts of the weakest action suffer always first; *e.g.*, the minimum action of cyanin plates at E in green, connecting the maximum actions in blue and orange, is suppressed first. In this way the sensitizing maxima are resolved into smaller and stronger bands, which appear more definitely. One to two drops of potassium bromide solution in 100 c.c. of the color-matter bath in which the bromide of silver gelatine plates are bathed, exercise a remarkable influence; and such a small addition may sometimes be of advantage to foggy plates. When a most complete reproduction of even quite weak light action is wanted, no bromide of potassium should be added.

It may be mentioned that the bromide of potassium always renders the reduction of the bromide of silver difficult, not only by light, but also by the developer. It acts therefore as a retarder when added to the pyro or iron developer. When photographing very intense light sources this addition is of advantage.

On the Connection of the Absorption of Coloring Matters and their Photographic Sensitizing Action.—In a former article[*] I explained the connection of the absorption of coloring matters with the sensitizing maximum upon bromide of silver, and mentioned the wave length of the strongest absorbed light rays in colored gelatine sheets; and, on the other hand, the wave length of the most active rays photographically, in the region of sensitiveness; and determined with approximate exactness the removal of the sensitizing maximum towards red.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—T. P. writes: Will you please tell me, in the BULLETIN, what is the cause of collodion fogging on a ferrotype plate? It has never done it before with me. I know it is the collodion, for when I mix it with old collodion it works all right. My formula is

---

[*] About the production of this coloring matter, which is not to be had in the market, see *Berichte der Deutsch Chem. Gesell.* 17 Jahrgang, S. 344.

[*] "About the Action of Different Color Matters Upon Bromide of Silver" (Report of the Imperial Academy of Sciences, Vienna, Vol. XCII, December, 1885). See BULLETIN, Vol. XVI.

Alcohol	10	ounces,
Ether	10	"
Cotton, H. D. C	100	grains.
Ammonium iodide	80	"
Cadmium "	40	"
" bromide	40	"

This has always worked good as soon as made, until last time, when the plate came up entirely covered with thick fog. I had some old collodion and I mixed about two-thirds of it with one-third of the new and it worked all right.

A.—We do not think the collodion is at fault. The trouble is probably in the silver bath. Neutralize the bath, place it in the sun for some hours, or boil it, then filter and add nitric acid, chemically pure, until slightly acid to test paper. This will work well then.

Q.—A. C. J. writes: Will you be so kind as to answer the following questions through the columns of the BULLETIN. 1st. Can Anthony's bromide paper be used in the place of ferrotype plates and finish the pictures as quickly as ferro plates? 2d. What makes my fresh made hypo fixing bath turn dark yellow after fixing one or two negatives; I wish you would tell me the cause of it? 3d. What is the best formula to keep sensitized albumen paper in good printing condition four or five days? 4th. How can I test hyposulphite of soda to find out whether C. P. or not? 5th. Also how much quicker will Anthony's new ferrotype collodion work than E. A. new negative?

A.—The new bromide paper will work as quickly as ferrotype plates, except that the drying takes longer. Your hypo bath turns yellow because it has become too alkaline from some cause. Add some strong solution of alum to it, shake thoroughly, and allow to settle, then pour off carefully; you cannot filter it clear. You can keep sensitized paper for many days in a light-tight tin box containing pieces of good quick-lime. We do not know a good method of testing hypo. We have not made any comparative tests with the two collodions.

Q.—H. C. E. writes: Will you please inform me, through your valuable journal: First, if it is practicable to restore a dry plate to its original sensitiveness after it has been developed and before it has been fixed? and secondly, how may it be done? I think I have seen something about it in the BULLETIN, but I am not sure. By answering the above questions you will greatly oblige.

A.—A method to accomplish the result similar to that you desire was published in the BULLETIN for October 8th, No. 19, page 606. We do not know of a method for obliterating a developed image so as to use the plate again.

Q.—F. C. M. writes: Please answer the following in the BULLETIN: 1. What is the difference between hydroxylamine hydrochloride, NH_3O,HCl, and the chloride which Dr. Eder, according to the BULLETIN, uses in his developing formula?

A.—They are one and the same thing. The correct term is hydroxylamine hydrochlorate, as the whole of the hydrochloric acid unites with the hydroxylamine without having the hydrogen replaced.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

DECEMBER 10, 1887. Vol. XVIII.—No. 23.

THE BULLETIN FOR 1888.

THE year is now rapidly drawing to a close and the BULLETIN will soon complete a new volume. In looking over the pages of the volume for the past year, we have no cause to feel ashamed of the work we have done; and the character of the material in its pages still remains second to none in the United States. We might make a long list of the names of the contributors; but what important worker in the science and art of photography has not been represented in its pages? Each notable discovery has been faithfully recorded, often in the words of the discoverer himself. Every new process and method of manipulation that had the slightest merit or originality has been presented to the readers of our journal. What better series of papers of lasting value ever appeared in a magazine than those of W. Jerome Harrison on the literature of our art? These pages of our journal will become more and more valuable as the years roll on, and coming generations will be thankful to our Editors for their wise decision to publish them so fully. Another series of articles of eminently practical value are those on Carbon Printing by Max Bolte. These papers have been copied verbatim in the European journals, thus bearing testimony to their practical value. Papers like these alone are worth a year's subscription to the BULLETIN. They were very expensive to produce, but we are satisfied that they were well appreciated by our subscribers, and we shall continue to furnish such practical papers during the coming year. Again we would call the attention of our readers to our Foreign Correspondence. This still remains superior to the like correspondence of any other American photographic journal, and will continue to be as important a feature of this journal in the future as it has been in the past. Through this correspondence one of the most important of modern photographic inventions has been placed before the readers of the BULLETIN promptly, and as a result has led to an improvement of the invention in American hands that is destined to play a most important part in future instantaneous photography. We refer to the Gädicke and Miethe magnesium mixture for instantaneous photography at night, and its subsequent improvement in the hands of Dr. Piffard. The end of this important invention is not yet apparent, but great results may be expected of it.

In the matter of reports of Photographic Societies and Associations we have given our readers the fullest details possible without being verbose and filling up our pages with material that has only a local interest. This feature of the

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Bulletin is a source of considerable expense, but we are always ready to give publicity to any interesting meetings of photographic societies, for these are the life of our art. . We should like the Secretaries of the various organizations to feel that the pages of the Bulletin are always open to the reports of proceedings of such societies.

Our Question Column still holds its well-earned reputation amongst both amateur and professional photographers. It is a source of interest and pleasure to our editors and appears to give great satisfaction to our subscribers.

Such are some of the good things we have done for the readers of this journal during the past year. In the future we shall do as much and more, for we have a number of improvements in contemplation that will add still more to the value of the Bulletin as a journal for both the professional and amateur photographer. Among other things, we have in hand negotiations, looking to an extension of our European correspondence, from a writer the work of whose pen is as familiar as his practical knowledge of our art is well known.

In the future we shall continue to illustrate the Bulletin in the same elaborate manner that we have followed in the past. This feature of the journal alone is a most valuable one. The pictures we present from time to time are always interesting, either as studies in portraiture or landscape, or as examples of unique processes or methods of a novel character in negative making or photo-mechanical printing. Many valuable suggestions are to be found in these object lessons of our art, and they will continue to be an important part of the functions of the Bulletin as a photographic instructor.

You have our promise for the future; you can see what we have done in the past. Now, readers, we ask you to second our efforts as well in the coming year as you have in the year gone by. Send in your subsciptions early. Remember that the more subscribers we get the better we can make the journal; for we feel their encouragement, and are constantly spurred on to greater and greater improvements in the journal. Help us and we will most certainly help you.

The Publishers.

EDITORIAL NOTES.

One of the most interesting events in photographic circles that have taken place lately is the celebration of the twenty-fifth anniversary of the Photographic Society of Philadelphia, at the Penn Club House on Locust street, in that city. We are sorry that circumstances over which we had no control prevented our participating in an event of such a notable character. The idea of organizing the society was first conceived by Mr. Constant Guillou as early as December, 1860; but nothing definite was effected until October, 1862, just twenty-five years ago, when the present President, Frederic Graff, was the presiding officer at a meeting for organization, which was completed in November of the same year. The first President was Constant Guillou; then followed Coleman Sellers, Frederic Graff, John C. Browne, Ellerslie Wallace, Jr., Joseph W. Bates, and then Mr. Frederic Graff, the present President, who is serving his second term as a presiding officer. Such a galaxy of talented photographers is evidently the source of the success and steady progress of this well-known society, and we hope that when it celebrates its golden wedding it will have as good a set of illustrious names that shall be enrolled upon its list of members during the next twenty-five years.

We are glad to note that the Providence Amateur Photographic Association had their fourth annual exhibition at the rooms of the Providence Art Club on December 6th to 8th. We have to thank the officers of the society for their kind invitation to be present, and regret that our time, and the distance of travel, prevented our enjoying what we are assured was a very interesting exhibition.

The English Annuals of Photography are in active preparation, and we have already received notice of the good things to be expected in the *British Journal of Photography* Almanac. This well-known annual, under the editorship of the veteran J. Traill Taylor, will be embellished with a handsome frontispiece picture of the English yacht Thistle, from a negative by Arthur H. Clark, and printed on gelatino-bromide paper. We have before us a copy of this picture, and it is certainly an excellent example of rapid printing, the proofs having been produced at the rate of many hundreds per hour.

There is to be a great International Exhibition of Sciences and Industries at Brussels, beginning May 19, 1888, and closing November 3d the same year. A special section will be devoted to photography and its applications. All applications for space must be filed before January 15, 1888, and all entries made before April 15, 1888. Armstrong, Knauer & Co., 822 Broadway, New York, are the authorized agents.

We note that one of the demonstrators of bromide paper has been elucidating the difficulties of our art before a well-known camera club. Among other things he showed the well-known experiment of bleaching an image by the use of copper chloride and redevelopment. This is stated to be an adaptation of a recently discovered French process, when the truth of the matter is, the method is an old one and can be found in many books on photography. An adaptation of it was recommended by T. C. Roche in his well-known little manual for amateurs, and published years ago.

The Indianapolis Camera Club was organized November 25th. The society begins with the encouraging list of twenty-three active members. A constitution and by-laws were adopted, and the following officers chosen for the term of one year: Tom E. Hibben, *President;* Ben D. Walcott, *Vice-President;* Carl H. Lieber, *Secretary;* R. R. Bennett, *Treasurer;* Chas. McBride, J. D. W. Ashton, Geo. S. Webster, Dr. J. R. Haynes, Charles Reitz, *Executive Committee.*

◆

[*From our Special Correspondent.*]

ENGLISH NOTES.

The annual exhibition of the Photographic Society of Great Britain, held in the months of October and November, constitutes an event of the first importance to the English worker in photography. This exhibition dates back to 1853, and always contains the cream of the work done in this country during the preceding twelve months by both amateurs and professionals. It is held in an admirable room in Pall Mall, specially built for the exhibition of pictures (it is the home of the Society of Painters in Water-colors). The number of visitors is invariably very large, while the pictures receive a full criticism in all the London papers.

This year about six hundred and fifty frames of pictures are arranged upon the walls and screen; while some seventy or eighty pieces of apparatus, representing the improvements of the year, are displayed upon a table in charge of an attendant who explains their peculiarities.

The picture of the year is undoubtedly Mr. H. P. Robinson's "Caroling," in which two girls are seen crossing a common on which a flock of sheep is browsing. The size is 25 x 13, and the price of copies (from the studio at Tunbridge Wells) is two guineas. It is no secret that the picture is a composite from two or three negatives, but "the end justifies the means," and I state without hesitation that this is one of the most charming and poetical pictures ever produced.

Mr. W. H. Hyslop, a well-known amateur, exhibits a number of grand yachting scenes about 16 x 13, including some of the yacht Thistle.

A new man, Harry Tolley, of Nottingham—who has come to the front at a bound—shows several 15 x 12 snow scenes and sea-side studies, which are something more than mere transcripts of nature. The place, time, and light have been so selected that these photographs contain the indefinable charm which is found only in the productions of a true artist.

There are numerous large direct portraits, and the increase in the number of platinotype and bromide prints is very marked.

Sixty frames of pictures were rejected for want of room.

About the apparatus there is nothing notable, as may be judged from the fact that the medal has been awarded to the plate box of Messrs. Arundel & Marshall, in which the novelty is that the box (of card-board covered with linen) has metal grooves lined with paper, and that a part of each end drops down so that the negative can be lifted out easily.

The discovery of the gelatino-bromide process has always been credited to Dr. Maddox, in 1871. But an investigator of the history of photography (Jerome Harrison) has discovered that a Mr. W. H. Harrison published an account of the same method in the *British Journal of Photography* several months before Dr. Maddox's article appeared. Now the joke is that Dr. Maddox has received gold medals and no end of *kudos* for the discovery; and, better still, that even W. H. Harrison believed in the learned doctor's claims, for he—though remembering well that he had made certain similar experiments—had completely forgotten that he had ever published them, the fact being that his account of the said experiments formed only a small part of a long gossipy article (something like "English Notes") which he had contributed to the *British Journal.* Isn't it a pretty kettle of fish? The moral is, as I have often remarked before, study diligently the photographic literature of the past and of the present, then you will neither forget your own discoveries nor be continually "discovering" facts already ascertained by others.

One of the few remaining "fathers of photography" has just left us. Robert Hunt was born at Devenport in 1807, His first book on photography was published in 1841. His "Researches on Light" (1844) and "Manual of Photography" (1851) each passed through several editions, and have become "classics." He died in London on the 17th of October last. Protosulphate of iron as a developer was perhaps his most valuable practical discovery.

It seems to me that English photographers—and perhaps I might say American likewise—have done very little to commemorate the labors of those who laid the foundations of their art. No statue, bust, scholarship or medal keeps green the memory of Fox Talbot or Scott-Archer; and have you done more for Morse or Draper?

We are now beginning the winter season, and lantern slide making, enlarging, and photo-micrography will be all the rage. Enlarging on opals has become in England a large and very profitable business, and I strongly recommend all professionals to pay attention to it. There is something very charming about a good opal, and as its permanency can also be guaranteed, it sells without difficulty at a very remunerative price.

In using the microscope in photography you will often be told that the lens needs to be specially corrected for the work. Now it is my experience, and one of the first microscope makers in the world with whom I have just been speaking fully agrees with me, that with ordinary powers (say from a one inch to a one-eighth) no such correction is needed. As to lantern slides I lately heard a curious experience. At a competition for the best slides a large number of very fine pictures were shown upon the screen, and the prize was finally awarded to a certain slide "not because it was the best photograph, but mainly for the artistic selection and posing of the subject." Afterwards it turned out that this slide was a copy of an engraving. Well, there was no stipulation that the slides should be "from nature;" but that it was rather sharp practice is the opinion of

TALBOT ARCHER.

[*From Photographisches Wochenblatt.*]

HARMONIOUS EFFECT IN LANDSCAPE NEGATIVES, AND THE PRINTING IN OF CLOUDS.

BY F. STOLZE.

(*Continued.*)

It happens quite often in landscape negatives that one side is much thinner or thicker than the other. In this case a similar arrangement may be recommended for use to that formerly applied for the so-called chemical sky. The albumen paper was submitted here to such sufficient exposure that the landscape was covered, and over the horizon was placed a roll of opaque paper whose radius is about equal to the vertical extension of the sky, which now passes through all gradations from black above to the white of the horizon. In this case we should proceed as follows.

The picture is printed as usual until one side of it is ready, while the other half is still light. Now a roll of corresponding diameter is so placed upon the printing frame that the light is cut off from the negative upon the finished part of the picture, while from there to the opposite portion it will act stronger and stronger. Thus the picture is left to print in different lights until both sides are equally strong.

It is evident that with this latter method, and also in the printing in of clouds, proper care should be taken that everything is in the right proportion of light, and it may easily happen in this respect that the prints may differ a little. It is also clear that the partly covered pictures mostly print pretty slow. It is therefore recommended to make in all these cases a reproduction negative, upon which everything is already in harmony. For this purpose I would particularly recommend to first make a good, well printed picture, with clouds, upon a direct gelatine emulsion printing paper; to squeegee it upon crystal plate glass, fasten the same to card-board, and then strip, after drying.

The picture is now retouched carefully with Indian ink, to which has been added some carmine ink. And here I would remark that a mixture of gum would not be advantageous. From this picture a negative is made which can be copied in a purely mechanical way.

It may still be desirable to add something about the manner in which one can make sure that clouds or any other object to be printed-in will occupy exactly the same place upon the different points. If only two or three prints are to be made it would not be worth while to make a new negative in the above described manner.

For this purpose the negative is so placed in the printing frame that it fits tight in one corner. The paper is now placed upon it so that it also fits exactly into this corner. After the landscape has been printed, the picture is carefully placed upon the cloud negative according to previous rule, and both are then—without moving—so placed into a frame that one paper corner again fits into a frame corner, and in this position the cloud negative is fastened to the plate glass with a little wax. Every other paper of corresponding size will then give exactly the same prints. This simple manipulation does away with all other particular arrangements.

I would mention here still another special case in which a similar method can be applied with advantage. Pictures are oftentimes greatly improved in their appearance by having ornamental borders put around them. I have myself drawn such lines with Indian ink upon tissue paper, and used this, fastened upon a plate glass, as a negative. To copy such border around a picture it is necessary to print the same in such a manner that the negative has a safety edge corresponding with the ornamental border, which will show white upon the paper.

To produce this cut-out a copy of the edge is made, being bordered from the inside by a broad black line, and the inner dark field is cut out carefully with a knife, without washing. The cut-out field is pasted in the frame, while the outer edge is placed as a mark upon the landscape negative. Two marks are now made outside of the drawing on two opposite corners of the border negative, which will show on the prints of it, consequently also upon the one which is placed as a mask upon the landscape negative. Upon this mask, before it turns black, pin-holes should be made through the two masks. It serves now as a safety border in printing the landscape, and if the sensitized paper is sufficiently large, these two openings will mark as black dots. It is now only necessary to place this copy upon the border negative so that the dots cover the mask, to insure a correct printing around the picture.

The case becomes a little more complicated if a sky is to be printed into the landscape. In this case the safety border should be fastened upon the sensitized paper with some gum paper before it is transferred from the landscape negative to the cloud negative. Or the safety border can be connected with an envelope in the style of a *passe partout*, so that the sensitized paper lays in the same, and can be transferred with the envelope from one negative to another.

I have also placed upon this ornamental border with great advantage the name, making a small cut-out in the lower part of the paper. Upon tissue paper of the same size as that cut-out I then wrote the name of the picture, which, according as required, I put into the cut-out of the frame, reversed, between paper and glass, so that in printing the name will appear in white letters upon a gray ground.

I have mentioned all these details, although they do not belong exactly to this theme, showing clearly in what manner it is sometimes possible to print two or three negatives together without one discovering how it is done, also under the supposition that these little tricks of making a border are new to a good many, and might find imitators, being particularly suitable to give small pictures a larger and much better appearance.

Where no sharp lines, as mostly here, cover the place of separation, the process is similar to the printing of the sky; sharp lines have to be avoided as much as possible, as the covering is always done from the back of the plate.

The production of the above-mentioned squeegeed-on positives, with consequent retouching, admits of such a changing of the different parts, that prints made this way do not show the slightest trace of the manner of composition. This process can therefore be highly recommended.

Finally, I would like to give to such as are unacquainted with it, a few principles of giving light and shade in landscapes, which should be altered only exceptionally, and which may serve as general rules.

First.—Surfaces lighted vertically by the sun are, aside from the coloration, lighter than those laying in the shadow, always under the supposition that the surfaces are not reflecting, or that they do not possess the capacity, like velvet, to absorb the rays falling upon them. A sunlit mat black surface is therefore generally lighter to the eye than a mat white one in the shadow. Exceptions to this rule may occur by light reflection. A sunlit surface may also be so rough that in reality the sunlit places form only a small percentage of the surface, and that the same appears therefore much too dark. This will be particularly the case when the rays fall obliquely.

Second.—By aerial perspective, shadows, as well as lights, approximate to the eye in a uniform ground tone with increasing distance, but which lays many times nearer to the clearest light of the foreground than the shadows. Photographically this is still the case in a much higher degree, this uniform ground tone being based upon the blue coloration of the air acting very little different from pure white with ordinary dry plates. This is the reason why the distance requires such a short exposure.

Third.—A deep blue sky without haze, which of course is very scarce in northern countries, is always much darker than any sunlit surface and lighter than any shadowed one. The latter refers of course to a hazy sky, it being the sky above which lights the shadow. It is this peculiar contrast of a clear sky from the sunlit parts which forms the character of the sunny clear weather, bestowing upon southern countries their incomparable brilliancy. At the same time we can also see that the contrast between light and shade must be so much greater in proportion to the clearness and blue color of the sky, showing that all shadows lit from a blue sky must have a bluish tone, which likewise appears most in southern countries, while at the same time the dark of the shadows is a much deeper one than in the north. All these circumstances give to the landscape a climatic character. Light and shade have to be quite differently divided in tropical countries than inside of the polar circle, and the photographer should endeavor to make good use of these differences in the products of his art. Only in this way will he succeed in rivaling art. *Translated by* H. D.

THE world owes us a living, but we have to enforce payment.—*Elmira Tidings.*

TWENTY RULES FOR MAKING TWELVE GOOD NEGATIVES FROM EVERY DOZEN QUICK DRY PLATES.

The following rules, from the pen of Dr. Garrison, of Chicago, should be remembered by every practical worker.

First.—Examine your camera and tablets or plate holders in sunshine, and if they are not light-tight, make them as nearly so as possible.

Second.—In the dark room lantern or window use deep red glass.

Third.—Examine your dark room, and, if it is not so, make it perfectly light-tight.

Fourth.—If you fill your plate holders for future use, put them in a dark box or closet in the dark room, and in the same or similar place keep your stock of plates, especially those in opened boxes.

Fifth.—For landscapes use a stop not larger than one twenty-fifth the focal length of your lens, and then, if the light is strong, remove and return the cap as quickly as you can.

Sixth.—In the woods the time should be from fifteen to thirty times longer. Early in the morning and late in the day, the exposure should be from ten to one hundred times longer. For portrait work under the sky-light, the exposure should last from half to three or four seconds according to the light used, and in this case the stop must be comparatively large. Some, having excellent lenses, use none at all, in which case the exposure may be nearly instantaneous.

Seventh.—Have your developer ready for use before you remove the plate from the holder.

Eighth.—After covering the plate with developer, hold the tray so that the red light only shines on the plate occasionally.

Ninth.—When you think development nearly finished, lift up the plate and look through it at the red light. If you can see any light through the high lights return it, and continue development until all parts except the deepest shadows are quite opaque, by which time the image will generally be visible, in part at least, on the back of the plate.

Tenth.—Use fresh developer for every plate. Do not waste a plate worth ten or twenty cents by trying to save half a cent on the developer.

Eleventh.—The films of very quick plates being quite transparent, are, and must be, thicker than those of slow plates. Hence quick plates require longer development, longer fixing, and longer washing than slow ones.

Twelfth.—Hypo is cheap. Therefore save time by using a strong solution, and avoid stains by renewing it frequently.

Thirteenth.—Thin, hazy negatives full of detail, but lacking in density and vigor, result from over-exposure.

Fourteenth.—Under-exposure, with full development, gives negatives dense in the high lights but without detail in the shadows and proper gradation of tones.

Fifteenth.—If development is stopped too soon, the high lights will be thin and the shadows nearly clear glass.

Sixteenth.—Gray fog is due to the action of diffused light at some stage of the process. Green or pink fog is caused by forcing with ammonia. It never occurs with the soda developer.

Seventeenth.—Yellow stains are caused by too much potash or soda in the developer, or by the use of too little sulphite of soda, and finally from the use of old discolored fixing solution.

Eighteenth.—Frosty appearance of the negative when dry is caused by crystallization of the hypo which still remains in the film. The remedy is to wash again.

Nineteenth.—An excess of pyro favors contrast and density, while an excess of soda (or other alkali) favors development of detail; therefore the careful operator will allow the pyro to be in excess until sufficient density is obtained, and then will force up detail by increasing the amount of soda.

Twentieth.—Pyro in solution is pyro in process of dissolution. It keeps best however in a very slightly acid solution. The presence of sulphite of sodium also retards its decay. Salicylic acid is poisonous to bacteria but does not prevent oxidation, which is the cause of the deterioration of pyro in solution.

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ON PHOTO-BROMIDE AND PHOTO-IODIDE OF SILVER.

By M. Carey Lea, *Philadelphia.*

PHOTO-BROMIDE OF SILVER.

This substance is formed for the most part by the same reactions as the corresponding chloride salt.

It is not however to be supposed that all reddish-brown substances resulting from the action of reducing agents on silver bromide are the photo-salt. By reduction AgBr may yield a brownish colored form of silver, which, mixed with unreduced AgBr, may form a substance resembling the photo-salt, but having none of its properties. The two are easily distinguished by the action of cold nitric acid, which, added to a brown mixture of AgBr and Ag, quickly dissolves the silver, leaving the AgBr. On the photo-salt it has no action.

A beautiful variety of photo-bromide is easily obtained by dissolving silver nitrate in ammonia, and adding it to ferrous sulphate previously mixed with solution of soda. Then KBr is added, dissolved in dilute sulphuric acid, until the mixture has a strong acid reaction.

Sometimes this method gives immediately a fine purple, sometimes a brown product; but in either case, after washing and cautiously heating with dilute nitric acid, a beautiful purple results. Much care is needed in the nitric acid treatment, or particles of yellow bromide will form.

A specimen obtained in this way gave figures indicating 7.25 per cent. of sub-bromide. Each specimen, however, varies in composition, often very materially.

I subsequently found it desirable in some degree to vary the method, and to determine the best proportions in which the materials were used to obtain a constant product. That which I prefer to use is as follows.

Six grams of silver nitrate are to be dissolved in 200 centimeters (cube) of water, and ammonia added until the precipitated oxide redissolves easily. Twelve grams of ferrous sulphate are dissolved in 200 c.c. of water, and the silver solution is poured into this. Then four grams pure caustic soda dissolved in 50 c.c of water are added, let stand a few minutes, then five grams of KBr dissolved in a little water. Finally dilute sulphuric acid until the whole has a strong acid reaction.

This product, well washed, and then heated cautiously with nitric acid (1.38) diluted with five times its bulk of water, gives photo-bromide of a shade of royal purple extremely beautiful.

Notwithstanding its fine color it proved to contain but little sub-bromide, not quite one per cent. (0.98).

Various other methods may be employed. Silver bromide may be dissolved in ammonia and treated first with ferrous sulphate and then with dilute sulphuric acid. This method, which is very good with the chloride, is less available for the bromide, because of the less solubility of the normal bromide in ammonia, so that although the product is good, it is small in quantity.

Very good results are obtained by dissolving silver phosphate, nitrate, and probably almost any other salt of silver in ammonia, adding ferrous sulphate, and, after two or three minutes, hydrobromic acid.

Potash bromide and cupric sulphate may be made to act on metallic silver in fine powder, but the product is contaminated with much copper difficult to get rid of.

When AgBr is treated with sodium hypophosphite a brown or brownish-purple form of photo-bromide is obtained, which seems to be more easily decomposed by nitric acid than most other forms of this substance.

Potash or soda with oxidable organic substances, made to react on silver nitrate and then treated with HBr, gives the photo-bromide. With soda and milk-sugar or aldehyde, a rose-colored or pink product is generally obtained.

Reactions.—In strong solution of potassic iodide it dissolves, and this solution, by dilution, lets fall pale yellow normal bromide. With a weaker solution it becomes somewhat lighter in color.

With acid ferric sulphate there is no action in the cold; but with a few minutes boiling the photo-bromide is converted into bright colored normal bromide.

In sodium hyposulphite it dissolves, leaving a little black residue of silver.

With ammonia, the action at first seems slower than is the case of the corresponding chloride, and, if the ammonia is poured over the photo-bromide in small quantity, it may seem to be without effect; but the photo-bromide, shaken up well in a test tube with a large excess of ammonia, is almost instantly blackened.

Exposed to light, the red shades of photo-bromide darken with great rapidity. Placed alongside of the corresponding chloride, the contrast is very striking. A strong image forms on the bromide long before anything appears on the chloride; nevertheless, if these two films are thrown into a developing solution, the chloride, on which nothing could be seen, gives a vigorous positive development, while the bromide, which already showed a strong positive image, develops a negative one. The details of this reverse development have been already considered in another paper.

As respects the direct effect of light unaided by development, the contrast between the action on the normal haloids and on the photo-salts is very striking. If a rose-colored photo-bromide and some normal bromide are exposed side by side, the normal bromide (formed in presence of excess of alkaline bromide) darkens, but very slowly, while the photo-bromide is quickly acted on. I have seen deep purple photo-bromide change to brown all over its surface with less than five minutes' exposure to diffused light in the middle of a room, an amount of exposure which would scarcely have produced a visible effect on normal bromide formed in presence of excess of KBr.

When photo-bromide is exposed to the spectrum, it shows the same difference in sensitiveness, and darkens more rapidly than photo-chloride; but it gives little indication of color.

When exposed under colored glass, photo-bromide gave distinct indications of reproducing colors, but much less favorably than photo-chloride. Under green glass it became bluish; under blue, greenish; under yellow glass it bleached; and under red glass the red of the photo-bromide remained unchanged.

Photo-iodide of Silver.

The most characteristic color of this substance seems to be a fine rich purple. It is obtained in much the same way as the corresponding chloride and bromide with this limitation, that an excess of alkaline haloid must not be present, as the photo-iodide is quickly destroyed by it. The iodine salt differs much more from the bromide than does the bromide from the chloride, and two striking distinctions are, its easy decomposition by its own alkaline salt, and its action with ammonia, as will appear beyond.

A very easy and satisfactory method of obtaining the photo-iodide is the following. Silver is to be reduced from the nitrate or chloride in fine powder in any convenient way; I have usually employed Levol's method. To a solution of potash, iodine is to be added until the liquid becomes almost black. This iodine solution is to be diluted, and poured over the silver by degrees, keeping the silver constantly agitated, until the whole mass becomes clear bright purple.

Any excess of silver present may be removed by boiling with dilute nitric acid, but this operation requires far more circumspection than in the case of the corresponding chloride and bromide products. The acid (1.36 was used) must be diluted with twelve or fifteen times its bulk of water; and the boiling must be very short, otherwise the photo-iodide is converted into normal yellow iodide.

Another method by which it may be obtained is to add ammonia to silver nitrate in considerable excess and to pour this into solution of ferrous sulphate. Potassic iodide is dissolved in very dilute sulphuric acid, and added till the mixture has a sharp acid reaction. It is necessary to observe that the KI must be added somewhat short of a proportion equivalent to that of the silver. Any excess of silver may be removed in the manner already explained.

Different specimens of the purple product in this way obtained gave various amounts of Ag_2I from 0.64 per cent. to 4.63. The same remark made as to the meaning of these determinations in reference to the other haloids applies to this.

The method of roasting silver oxide until it is black, and acting on it with the hydrogen acid of the halogen, which works well in the case of the chloride, does not answer well for the iodide.

When silver iodide is boiled with solution of sodium hypophosphite, it gives a brown product, evidently indicating that reduction to some extent has taken place; the hypophosphite solution may, or may not, show traces of iodine. The color of the silver iodide may show a very marked darkening, and yet the solution may give no trace of iodine by the most delicate reagents.

This was very difficult to explain, until I found that silver iodide has the property of taking up and retaining small portions of iodine, a reaction not very surprising in view of the tendency I have found in silver haloids to take up foreign substances of very various natures, and also of the facility with which iodine is taken up by alkaline iodides. This property in silver iodide was verified by shaking up portions of freshly precipitated and still moist AgI with iodine solutions. Alcoholic solution of iodine diluted until it has a pale sherry wine color is quickly decolorized by AgI, and the same thing happens with a very dilute solution of iodine in KI, which in a few minutes becomes as colorless as water.

This reaction I found particularly interesting, for it not only explained the action of hypophosphite in the case just mentioned, but also gave a clue to the cause of a phenomenon I observed more than twenty years ago, and which then and long afterwards seemed to me an unanswerable argument in favor of the physical nature of the latent image.

At the time referred to I formed films of pure silver iodide entirely isolated from foreign matter, by reducing metallic silver on plates of ground glass, iodizing them with alcoholic solution of iodine or with Lugol's solution, then washing most thoroughly under a tap for hours. When these films of silver iodide were exposed to light, they received an invisible image which could be developed. But these invisible images, if the plates were laid aside in the dark, had a property of fading out in a few days or weeks, then could no longer be developed, but the film could receive a fresh image. This seems an unanswerable proof of the physical nature of the latent image, at least on silver iodide. The argument was: If the production of this latent image is the result of chemical action involving the loss of iodine by the silver salt, how then is this iodine recovered when the image fades out? If it is formed of subiodide, where does this latter substance get back its iodine to return to the normal form, as it unquestionably does?

No answer could be given then or after, and this experiment, repeated and confirmed by others, has always seemed the strongest support of the physical theory. When, however, it appears that silver iodide can take up iodine and hold it, the course matters follow becomes evident. By the action of light a very small quantity of subiodide is formed, and combines with the normal to form photo-iodide. The iodine set free evidently does not pass off, but remains combined with neighboring molecules of AgI, and in the dark gradually recombines with the photo-iodide, reconverting it to normal AgI. In this retention the lower tension of iodine as compared with bromide and chloride no doubt plays its part.

In thus explaining away the fading out of the latent image on silver iodide, the last argument in favor of the physical theory is destroyed, while the chain of proof supporting this new explanation, that the latent image consists of normal haloid combined with its own subsalt, remains unbroken.

Reactions.—When ammonia is poured over purple photo-iodide of silver, the color quickly passes to a salmon, and then, even after some days, seems to undergo no further change. Of separation of metallic silver, as in the case of the corresponding chloride and bromide, there is no trace.

In sodium hyposulphite it dissolves slowly, leaving a slight, but distinct, residue.

Dilute nitric acid mixed with dilute solution of KI, slowly, but completely, converts it to normal silver iodide.

Light acts slowly upon it, changing the color to greenish-gray.

I have already spoken of the remarkable manner in which light acts reversely by development on photo-bromide. On photo-iodide the effect is usually the same as on photo-chloride, viz., the action is direct; but occasionally it reverses, and the exposed part comes out lighter in development than the part that has not been exposed. In this respect the behavior of the iodine compound is intermediate between that of the chlorine and the bromine.

NOTE IN CONCLUSION.

The investigations of which the preceding pages are the result are still unfinished. I have very lately observed the formation of another group of silver haloids quite different from the photo-salts. The members of this new group are deeply colored, purple or red, not unlike the photo-salts, but are sharply distinguished from them by very different reactions. The photo-salts are unaffected by cold strong nitric acid; these new salts are by very dilute acid instantly converted into a pale pink substance, which appears to be a photo-salt. But the most striking difference is in the action of ferric chloride. A strong solution of this substance shows no action with the photo-salts unless left in contact for many hours or days. But these new haloids are instantly converted by it into what is apparently light pink photo-salt.

So energetic is this action that a solution of ferric chloride containing one part only to a thousand of water quickly attacks these dark purple salts, and decolorizes them. Such a solution might remain indefinitely in contact with the substances I have called photo-salts without affecting them.

Other differences exist. So far as I have yet been able to observe, these new haloids are formed pure, whereas the photo-salts are almost always contaminated with either free silver, or free subsalt, or both. As yet there has been no time to fix with exactness their mode of formation, or their properties, which I hope to do at a future day.

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THE brain of an elephant is somewhat larger than that of a man; but the trunk of an elephant is considerably smaller than that of a woman.—*Lowell Courier.*

GEORGE WASHINGTON'S face appeared on the postage stamp when people began to put their tongues out at him. Even then it was behind his back.—*Yonkers Statesman.*

THE PHOTOGRAPHIC USES OF NITRITE OF POTASSIUM.

BY H. H. O'FARRELL.

[Read before the British Photographic Convention at Glasgow.]

MR. W. A. GREENE recently exhibited at the Camera Club a specimen of a print which he had taken on bromide paper that had been treated with nitrite of potassium. This is the same paper that is issued with the commercial actinometers, and the possibility of using it for printing on has doubtless suggested itself to many, though I have not seen any specimens other than those exhibited by Mr. Greene. I have lately been making some experiments on the use of nitrite of potassium both in the paper and in the developer, and having been called on at very short notice to contribute a paper for the convention, I think a short description of the results may not be uninteresting to those who are working, or would wish to work, in the same direction, though from the limited time at my disposal, as well as from other causes beyond my control, the experiments are far from complete.

The method I adopted was to make up a ten per cent. solution of nitrite and soak the paper thoroughly, leaving it immersed for ten minutes or a quarter of an hour, and then allow it to dry slowly. The paper thus treated behaved in the ordinary way that the actinometer papers behaved, toning to a grayish-blue, which deepened afterwards into indigo. By placing the paper between the leaves of a book and drawing out a portion every five seconds, I found that in strong sunlight the paper attained its maximum density in twenty-five seconds, and that beyond that period no perceptible change occurred.

A portion of the paper however, which I treated somewhat differently, behaved in a different way. Instead of turning a grayish-blue, it began with a delicate pink, deepening to a litmus red, and afterwards a brown, before taking on the ordinary blue and indigo tones. Having by me a negative of an individual with brown hair, I conceived the idea of taking a print, with the happy result that by arresting the operation at the stage when the flesh tints had acquired sufficient depth, the hair had toned down to the brown stage and the coat to indigo.

I conceive some use may perhaps be made of these results not only in color photography, but in the more limited area of color portraiture. A paper which gives flesh tints, browns, and indigo-blacks, possesses a sufficient range for the portraying of persons other than the ancient Britons who stained their bodies with woad, or the late Mr. Tittlebat Titmouse, whose hair at one period of his existence assumed a pea-green color.

At present however there is a difficulty to be overcome which is the same that has hitherto proved a stumbling block to all color photography, the difficulty of fixing the prints by means that will leave intact, and at the same time render stable, the tints obtained. Hyposulphite of soda destroys the colors at once, bringing back the blues to the original pink, and ultimately changing them to a very unpleasant yellowish-brown.

Hypo being therefore out of the question, I next thought of sulphite of soda, which has been recommended by Captain Abney as a fixing agent for albumenized prints. To my great satisfaction I found that the sulphite had no effect upon the colors, and after leaving the prints for about half an hour I concluded they were fixed. So indeed they were in the sense that the free bromide had been removed and the image rendered permanent, but the pinks and browns still remained fugitive and ultimately deepened in strong light to a blue tint.

I have not yet tried other fixing agents, but hope to do so shortly. At present however I see no prospect of being able to render the pink or brown tints permanent.

Nitrite of potassium used in small quantities in the developer (about twenty to fifty minims to the ounce of a ten per cent. solution) appears to have a considerable accelerating influence. I exhibit specimens of prints which have had the same exposure, and were developed with the same developer with and without the addition of nitrite of potassium.

I have also tried the effect of soaking plates in the nitrite solution and exposing in the camera. I obtained on a dull day a faint image of the high lights in five minutes and a badly defined picture with thirty-five minutes' exposure. The image was, however, capable of intensification or development by a very weak solution of ferrous oxalate, about one part of iron to twelve of oxalate. The result however faded considerably in the fixing bath (hyposulphite) but appeared to be capable after fixing of intensification with the ordinary ferrous oxalate developer.

I am afraid this paper is necessarily imperfect and sketchy, but I shall be glad if it leads more experienced experimenters than myself to investigate the phenomena. Two cautions are necessary in using this very hygroscopic salt with plates, to immerse the plate in alum before developing in order to avoid frilling, and to use the nitrite solution fresh.

GELATINE EMULSION.

BY A. L. HENDERSON.

[Read before the British Photographic Convention at Glasgow.]

When I had the honor of reading a short paper at the convention last year, I mentioned the fact that by the addition of a small quantity of nitrates and bromides to a finished emulsion much greater rapidity and density could be obtained, and that doubtless further experiments would reveal or explain many things that at present are still inexplicable. I promised that I would at some future occasion detail other experiments. I will now endeavor to redeem this promise.

I think I have stated that if an emulsion is set and remelted several times, greater speed and a finer quality is the result. My explanation is this, that by the contraction of the gelatine and the subsequent remelting, the bromide of silver is broken up and altered in crystalline form. Now I know that it will be argued that if emulsion is kept at a liquid temperature the same result would follow. I have tried the experiment of keeping half of a batch at about eighty degrees for ten hours. Setting and remelting the other half four times during the ten hours there was a much greater increase of speed and density in the latter half. Another year's work with the separator corroborates all my previous statements concerning the value of the machine in emulsion making. The full value of the ripening action by the addition of nitrates, etc., to the finished emulsion can only be gained by a complete elimination of the emulsifying gelatine and by products. I do not say that the ripening action will not take place in a washed emulsion, but there is an uncertainty about it. The separator has shown me that so long as the temperature of emulsion is kept down there need be no danger of fog, especially in the presence of caustics; yet with a large quantity of carbonate of ammonia an emulsion may be boiled for a considerable time without any fog appearing.

One of my latest dodges is to make an emulsion with carbonate of ammonia, separate, add fresh gelatine, nitrate of potash, and bromide, and then, to prevent decomposition of the gelatine by addition of a small quantity of chrome alum. I keep this emulsion liquid at a temperature of 98 to 110 degrees for twenty-four hours; this increases the speed from, say, 16 to 22 on Warnerke's sensitometer. A further prolongation of heat will generally require a fresh addition of chrome alum, when a still higher reading will be obtained; and, what seems very strange, the camera reading will be much higher than the sensitometer one. I have had two emulsions, both giving 16 Warnerke with a rapid shutter; and using a stop *f*-32, I had a fully exposed negative in the one case and in the other only a faint indication of an exposure. There is a remarkable ripening action by the addition of fresh gelatine, bromide, nitrate, and alum. The method of breaking up of the bromide of silver was first published by Professor Stebbing, and at the time I tried it I found that the effect was obtainable without the bromide, yet I failed to see any advantage. I will now, as an experiment, show you, that by mixing nitrate of silver and bromide of potassium in water, then washing the precipitates and adding a few grains of gelatine and applying heat, that a remarkable breaking up of the bromide of silver goes on. Of course, as the salts are so perfectly removed an oxidation or alteration of the bromide is likely to take place when heat is applied; the addition of the nitrates, etc., as aforesaid, tends to prevent this.

FINDERS AND FOCUSERS.

BY LIONEL CLARK, C. E.

[Read before the British Photographic Convention at Glasgow.]

Could one have known Daguerre's thoughts whilst he was sitting with white-washed face before the camera, patiently waiting for the sluggish plate to delineate his features, we should doubtless have found that he was building aerial castles where exposure was reduced to a minimum, and indeed we know how hard he and his successor, Dr. Victor, worked in the direction of improving the rapidity of their sensitive plates. In fact ever since the discovery of photography, experimenters have been striving to improve in this direction, and there are few commercial brands of plates now made but that are too rapid on open subjects for hand exposure, and some form of shutter is a *sine qua non* with all photographers. But remembering the old adage, although it is an easy thing to get shutters and plates for the most instantaneous kind of work, it is not quite so easy to catch your object. By the time you have focused and got your back in, slide removed, and shutter set, your subject may be a long way off. In the case of a passing express, the 4.5 problem of Euclid for the tyro amateur, it is easy enough. You can do all that beforehand and await the arrival of the fiery Pegasus, but all animate or moving objects do not run on rails, but have to be followed and taken at any moment. Even at the Zoo, where the denizens are decidedly limited as to recreation ground, it is a constant enough fact to find, after the plate is developed, that the animal is not in focus, or else his tail or head are wanting. In the case of ships and yachts, how often do we see a good picture spoilt owing to the want of a few feet more bowsprit or the peak of the topsail. Of course with any of the ordinary finders this should not happen, and as yachts are virtually all taken at about the same distance, the focus does not come in as a factor, for a fixed focus and a small stop brings everything sharp. But in the case of animals, where perhaps a portrait lens with small depth of focus must be used, and where the subject is well within the focus variation of the lens, this plan does not work.

Some cameras are marked for foci of varying distances, but this is open to many objections. You have first to train yourself to properly judge the distance, and then you have to rapidly change the eye from the finder to the marks and back again, and it is more by good luck than skill that you get a successful picture. Men like Mr. Dixon, who make a specialty of animals, have boldly gone in for double cameras and double lenses, and this plan is without doubt the most effective; but it is expensive and extremely cumbersome, and quite prohibits its general use, for no one could make a point of carrying about two cameras because he might get some instantaneous work. Some time back I tried using a telescope, and marked off the focal lengths to correspond with similar marks on the baseboard of my camera, but soon dropped it, as I found it very inconvenient, and it also required two persons to use it properly. Latter on I utilized for the same purpose that scientific toy called the walking-stick telescope. This, as many of you doubtless know, consists of an objective which is clipped on to the walking-stick, and can be slid up and down on it, and a plano-concave eye-piece, also fastened on to the stick, thus forming a Galilean or opera-glass style of telescope, and is really of more or less practical use. I screwed an objective of the same focal length as my lens on to the front of my camera; on the back or sliding portion I fixed an ordinary focusing glass with a piece of ground glass cemented on; subsequently I discarded the ground glass and substituted a small wire to focus on. This apparatus was adjusted to the camera, and of course the two objectives being of the same focal length, when the top one was in focus the bottom one, that is the camera proper, was also in focus, and this held good for every position of the object. There was, I believe, nothing new in this. Mr. J. Traill Taylor described such a focuser at the conference last year, and Mr. McKellen also made a similar one, and moreover I believe it has been described at a much earlier date. The drawback I found was that it only gave you a very small portion of the subject, and you were obliged to have a finder at the same time, and the changing from one to the other is by no means easy to manage.

Last summer I was rigging up a camera specially to take some puppies and kittens, and had intended rigging up a second camera on top of the first. On working out the designs, I at once saw that by far the simplest and easiest method was to utilize the ground glass of the camera proper, since it could not be required at the time of exposure. I simply turned up the screen then till it stood vertically above the top of the camera, and in a plane of course parallel to the plane of its usual position. On the front of the camera I raised up an extra front above the existing one, and fitted into it a lens of the same focal length as my objective; this lens was in a sliding tube. I now had the framework of a second camera on top of my first one, and throwing a focusing cloth over the whole, I got an image on my upturned focusing screen. To adjust this I first focused very accurately the bottom camera, the screen for this purpose being of course turned down on some object. I then, without shifting the camera, turned the screen up, and clamped it there with some brass pieces, and then slid the tube of the upper lens in and out till I got the same object sharply focused on the screen in its upper position. Now the two cameras, or rather camera and finder, coincide, and of course as I rack out the one the other follows; and the foci of the two lenses being equal, whenever an object is sharp on the turned up screen I know that it is also sharp on the plate with double back below. There is no need to be particular as to the lens used for the finder—even a spectacle lens will do; but this is objectionable where your lens proper is of a longish focal length, as the spectacle glass is totally uncorrected for spherical aberration, and gives a more or less sharp image over a great depth of focus; a single landscape lens, but with the stops removed to give as much light as possible, is undoubtedly the best, except you go to the expense of having twin lenses.

Although the focusing cloth does extremely well as a makeshift, yet in the case of wind something more is required. I have a sort of card-board body that folds like one of Ottewill's old collapsing cameras. This is made in the form of a truncated pyramid. It slips with an elastic band over the tube of the finder lens, and so gives the play required; the other end comes over the focusing screen and projects like a box a little way beyond it, and gives the necessary shade to it, so as to allow the image to be seen. Many other ways of covering in the finder will doubtless present themselves to you—a body like a Chinese lantern would do, or even an old bellows, though somewhat more bulky; for you must remember that it is not at all necessary to keep out all light, indeed it is surprising how much you can see with nothing between the eye and the ground glass.

As to the manner of retaining the screen in its upright position, or of fixing on the false front, it is impossible to give any strict directions, cameras differ so in construction, but it requires but a small amount of ingenuity to devise some method. I may add that I have for my small camera a focusing eye-piece which is kept pressed up against the ground glass, being held in position by a spring; this leaves me both hands free to hold the camera and focus, etc., and at the same time permits me of getting, if necessary, a most absolute focus. I have found this little arrangement of focuser and finder, which I described and showed at a meeting of the Camera Club last October, of the very greatest use and benefit. I alway carry it about with me, for it at least has the merit of neither adding anything to the bulk or weight of your kit, although at the same time you have all the advantages of a double camera.

ORTHOCHROMATIC PHOTOGRAPHY.

BY C. H. BOTHAMLEY, F.I.C., F.C.S.

[Extract of a paper read before the British Photographic Convention at Glasgow.]

THE subject of orthochromatic photography has latterly attracted considerable attention, and has become of so much importance that it seemed probable that a *résumé* of the results which have so far been obtained might not be without interest to the convention. It is well known that ordinary photographic pictures have no true values, that is, do not represent the various colored objects with their proper degrees of relative brightness. Yellow, orange, and green objects, which are bright to the eye, are almost black in a photograph; whilst blue, purple and violet objects, which are comparatively dark to the eye, are practically white in a photograph. The explanation lies in the fact that ordinary photographic plates are very sensitive to blue and violet rays, but are only very slightly affected by green, yellow, and orange rays; whilst the eye is most sensitive to yellow, orange, and green, and is only very slightly sensitive to blue, violet, and red. In order to obtain pictures with true values, it is therefore necessary to alter the character of the plate in such a way that its sensitiveness to blue and violet is very much diminished, whilst its sensitiveness to yellow, orange, and green is very much increased.

In 1873, Vogel discovered that the addition of certain dyes to collodion plates makes them very sensitive to orange, yellow, and green, and his results were confirmed by other observers. In 1882–83, Attout & Clayton took out a patent in France and England for the application of eosine in conjunction with an alkali to gelatine plates, the word eosine being used inclusively. Dr. Eder, of Vienna, has investigated the effect of a very large number of dyes on gelatine plates, the dyed plates being exposed to the solar spectrum. He found that several dyes slightly diminished the sensitiveness of the plates to blue and violet, whilst they increase the sensitiveness to green, yellow or orange in a marked degree. Only comparatively few dyes however exert any useful sensitizing effect. Eosine and its allies and cyanin were found to give the best results.

The author has repeated Eder's experiments with the eosine dyes and cyanin, using the spectrum of burning magnesium instead of the solar spectrum.* His results confirm generally those of Eder, but he finds that a much greater sensitiveness to yellow, etc., can be conferred upon the plates than was observed in any of Eder's published experiments. Plates treated with an aqueous solution of erythrosin or an ammoniacal solution of rose Bengal are about half as sensitive again to the yellow as to any other part of the spectrum, whilst plates treated with an ammoniacal solution of erythrosin are about two and a half times as sensitive to yellow as to any other spectral region.

There are two methods of adding the dye to the gelatino-bromide. In one the dye is added to the melted emulsion, or to the solutions before precipitating; in the other, the dried plates are steeped in an aqueous or ammoniacal solution of the dye. There is, at present, a large preponderance of evidence in favor of the latter, or bath process, so far as regards the rapidity and orthochromatic effect of the plates.

The particular dye to be used depends on the nature of the effect desired, since different dyes confer a maximum sensitiveness for different rays. The following list may be useful. Chrysaniline for green; eosine for yellowish-green; erythrosin or rose Bengal for yellow; cyanin for orange and orange-red, cœrulein S. for red. For general purposes erythrosin, which is closely related to eosine, is the best, since it confers a maximum sensitiveness for yellow, together with considerable sensitiveness for orange and green, especially if used in ammoniacal solution. Of the many varieties which are in the market, the author recommends either the erythrosin extra of Meister, Lucius & Bruning, or the erythrosin I of the Badische Anilin und Soda-Fabrik. The method recommended for preparing the plates differs but slightly from that of Mallmann and Scolik, or Eder. The plates employed should be of medium rapidity, since highly sensitive plates are so near the fogging point that the treatment with ammonia and the dye is very liable to carry them past this point. Paget prize plates XXX, or Wratten's ordinary, answer very well. The plates are carefully dusted with a camel's hair brush and are then soaked for about two minutes in a one per cent. solution of ammonia, drained for a few seconds, and then immersed for about two minutes in the following bath :

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* For details see the *Journal of the Society of Chemical Industry*, June. 1887, pages 423–433.

Erythrosin solution (1 to 1,000)	1 part.
Ammonia (1 to 10)	1 "
Water	8 parts.

The dish is rocked now and again to promote uniform staining, and the plates are drained with their lower edges on blotting paper and dried in complete darkness. They will keep for several weeks, but the rapidity falls off somewhat. The above formula will serve for dyes other than erythrosin. Stock solutions of dyes (1 to 1,000) are kept ready prepared; they are made with sufficient accuracy by dissolving five grains of the dye in ten ounces of water.

All operations connected with the preparation and development of the plates should be conducted in as weak a light as possible. Yellow light may be used if extreme care is taken to keep the plates covered up, but it is better to use ruby light, such as is given by a candle behind one thickness of ruby glass or paper. Exposed plates are best developed by means of alkaline pyro tolerably well restrained. All the other operations are conducted in the usual way.

Although the application of the dye increases the sensitiveness to yellow, etc., the sensitiveness to blue and violet remains much too great, and in order to obtain correct gradations it is necessary to diminish the intensity of the blue and violet rays by interposing a transparent yellow screen between the object and the lens, or between the lens and the plate. The depth of tint of the screen determines the proportion of blue and violet which is cut off, and hence determines the relative prominence given to yellow, orange, etc. By properly selecting the depth of screen to suit the subject and the result desired, the photographer is able to exercise very considerable control over the character of his picture. The best form of screen consists of a film of dyed collodion, gummed to the diaphragm of the lens. A yellow dye, such as Manchester yellow or aurantia, is dissolved in enamel collodion to the required depth of tint, and the collodion is poured on a carefully polished glass plate. When dry the collodion is stripped from the plate and cut into pieces of suitable size. A plate of yellow glass, or of ordinary glass coated with dyed collodion or gelatine, may also be used, and is best cut in the form of a circle and placed inside the hood of the lens, a position in which it does not interfere with the use of cap or shutter. It is essential that the faces of the glass screen be as perfectly parallel as possible, in order that the definition of the lens may not be interfered with.

Treatment with the ammoniacal dye solution increases the rapidity of the plates about three times, but the yellow screen cuts off nearly all the blue and violet, and hence the use of the screen increases the exposure required to twice, thrice, or even ten times that of the undyed plates without a screen, the time depending on the depth of tint of the screen.

In order to illustrate the character of the results obtainable, the author exhibited several sets of photographs of various colored objects taken: (1), on an ordinary plate without any screen; (2), on a dyed plate without any screen; (3), on a dyed plate with a yellow screen. The time of exposure was the same in all three cases, and since the plates exposed without a screen were very much over-exposed, every chance was given for the yellow, orange, etc., to register themselves on the plates. Undyed plates exposed for the same length of time behind a yellow screen gave no trace of a developable image. Each plate was developed with a view to obtain the best possible rendering of the yellows, greens, etc. The examples shown included photographs of a scale of colored paper, chromo-lithographs, flowers, pottery and landscapes. The values of the pictures taken on dyed plates with a yellow screen are very satisfactory, and are an immense improvement on those taken in the ordinary way. In the case of the flowers and pottery the differences were very marked indeed. When the dyed plates are exposed without any screen, the rendering of yellow, green, and orange is very much improved, but blue and violet are far too light. It is only when the yellow screen is used that the values become correct. Care is necessary, however, to avoid cutting off too much of the blue and violet, and thus making the gradations incorrect in the opposite direction. In landscapes the improvement was much greater than was anticipated. It is most marked in the rendering of masses of foliage and of the different shades of green. Moreover, the yellow screen cuts off the greater part of the blue atmospheric haze and thus gives clearer distances.

Many points of detail require further investigation, but it may safely be said that orthochromatic methods place great additional powers in the hands of the photographer, and constitute a very great advance in both scientific and artistic photography.

COLORED CHLORIDE OF SILVER.

BY W. H. HARRISON.

[Read before the British Photographic Convention at Glasgow.]

From time to time, in most civilized countries, and not always in the great gooseberry and sea-serpent season, the daily newspapers announce to their readers the discovery at last of the means of taking photographs in natural colors; in such cases investigation always proves that the vendors of such photographs are taking them by known methods and afterwards coloring them by hand. These commercial ventures have nothing to do with true heliochromy, the first recorded experiment in which was performed by Seebeck, of Jena, in 1810; the subject was in later years studied and brought to a moderately advanced state of perfection by Becquerel, Poiteven, and Saint-Florent. Sir John Herschel observed some of the phenomena of photography in colors, but did not follow them up, and Niépce de St. Victor (nephew of Nicéphore Niépce, one of the fathers of the photographic art-science) produced some of the best photographs in natural colors which have yet been seen; for the most part, however, he merely made use of Becquerel's discoveries, and in this matter was shining chiefly by reflected light, as I have recently become aware while reading up the original memoirs in the history of this subject. So far colored photographs on silver plates have given the best pictorial heliochromic results, those on paper not being so true to nature after the partial fixing of the proofs. A chief difficulty always has been the fixing of these pictures; some of them will resist the action of daylight for a few weeks or months, but those who produced them say that they will fade at last. They are products of scientific and not of commercial interest.

Quite recently Mr. Carey Lea, of Philadelphia, who has been indefatigable in original experimental photographic research, has succeeded in producing red or violet chloride of silver in bulk, and it is possibly the same substance upon which heliochromic results have been obtained by early experimentalists; hence, as the record came under my notice while reading archaic documents for other purposes, I thought it might be well to translate and forward to the present Photographic Convention at Glasgow what Becquerel thought of the colored chloride of silver upon which he obtained his photographs in natural colors.

In Vol. XXII of the *Annales de Chimie et Physique*, Paris, 1848, Becquerel says:

"I think that the compound formed on the metallic silver under the action of chlorine is a special chloride, perhaps a violet subchloride, or a mixture of white chloride and subchloride."

In the *Annales de Chimie et Physique*, Vol. XXV, 1849, he says:

"If freshly precipitated white chloride of silver is taken, well washed in obscurity, then extended upon ground glass or paper, and a portion of it covered with an opaque screen, while the other part is exposed to a feeble light, when the solar spectrum is afterwards thrown upon the surface, so that half of it falls upon the exposed and the other half upon the unexposed part, the action of the spectrum upon both can be observed simultaneously. After the lapse of a little time, and with diffused light eliminated, under the blue and violet rays both the chlorized sections are alike colored violet; from the red almost to the blue no effect is produced upon the white chloride in less than about half an hour, while on the pre-exposed chloride the red rays give a slight rose tint, and the green rays a green tint. If, instead of using a well washed chloride, photographic paper with free nitrate of silver is employed, the effects are complicated and the colors entirely masked. The effects of continuation between the blue and red, which I described several years ago, can then be observed. * * * Among the solutions which destroy the colors of photochromatic images, and which dissolve and decompose chloride and subchloride of silver, and precipitate metallic silver, the most active is liquid ammonia. When a colored proof of the spectrum is washed with this, the spectrum appears as a grayish band upon the brown ground of the plate. But if this band is examined with attention while the film is still wet, it is seen that the extremity which was red before the washing has now a slight green tint, whilst the previously violet extremity is now blue; these tints are complementary to the first, when the plate dries the effect disappears."

Mr. Carey Lea seems to me to have been making chloride of silver reduced in small part to a colored mixture which curiously resists the solvent action of nitric acid; the heliochromic films are likewise partially reduced, but by exposure to diffused light or prolonged heat before they are used to photograph colors. When, however, one has a white salt decomposed to such an extent as to be colored red or violet, I do not yet see what that has to do with the nature of the latent image, in which there is no evidence either to eyesight or to chemical tests that such colored salts have been formed. That an image should develop where a sensitive plate has been marked with hypophosphite of soda, perhaps merely means that the developer has a more intense action there, as from its composition one would expect hypophosphite of soda to be a developer; it is not so however at normal temperatures. That a weak solution of it should have a retarding influence may be regarded as a curious unexplained fact. Supposing that the method had been continued until the water used to mark the film contained no hypophosphite of soda at all, and supposing a developer were then applied to the film before it was absolutely dry, would not with most plates the silver deposit upon the damp parts then be lighter than upon the rest of the plate? Mr. Carey Lea's utterances about the red haloid salts do not seem to be yet finished, and these critical comments are made chiefly with a desire for additional information. I am very glad to see his contributions once more in photographic literature.

As in most original discoveries, at first it is impossible to see the future practical value of Mr. Carey Lea's interesting revelations, nor does the true man of science care for future practical issues when laying bare to the world a new truth about the phenomena of nature. In this instance chemical methods of producing heliochromic chloride of silver in bulk seem to have been discovered, consequently if Mr. Carey Lea would tell us how attempted pictures in natural colors produced upon it compare in point of accurate rendering of hues with those obtained by Edmond Becquerel, Poitevin, and Saint-Florent, an interesting point would be cleared up. The discoverer is able to select the sample of red chloride which gives the best results, because of his antecedent experience; the reader who wishes to try for himself does not know by which of the numerous methods of preparing the new chloride he is likely to get the best promise of good heliochromic results.

This colored chloride will probably help to give a true theory of full printing upon ordinary albumenized paper; but where is its link of connection with the nature of the latent image? How do its properties explain the experiments of Dr. Janssen, of Paris, who obtained three or four reversals of the invisible image successively upon the same film? How do its properties explain Mr. Carey Lea's own noted experiment of the past, of the image upon pure iodide of silver dying out again and again during a rest in darkness, and afterwards leaving the plate ready each time for a fresh impression? The two last questions I have several times put straight to the advocates of the chemical hypothesis of the latent image, and have never been able to obtain a straight answer.

We hear much talk about suboxide and subchloride of silver, but nobody has yet been able to produce a sample of either which chemists as a body will admit to be such. Dr. Hodgkinson does not believe that his production is subchloride of silver, but a salt containing oxygen; possibly it is the same chloride that Mr. Lea has manufactured.

There will perhaps be some difficulty in getting behind the dynamic hypothesis of the latent image first launched upon the world by the late Mr. Mungo Ponton and myself, which is that the invisible picture is due to modifications of the relative motions of the atom of chlorine and the atom of silver, so that at one portion of the new vibratory swing set up by light, their attractions are so weakened that the chlorine can be seized by the developer. This hypothesis readily accounts for the resensitizing in darkness of an exposed film of pure iodide of silver, and is the only hypothesis which as yet has in any way been used to explain Dr. Janssen's experiment. It also explains why some parts of the spectrum act more than others upon sensitive salts.

On bromide of silver suspended in gelatine, the latent image may last for months, or in some cases perhaps for years, but analogies of the same nature may be found in the realm of physics.

Some samples of powdered fluor-spar temporarily phosphoresce beautifully upon a hot shovel in the dark; put the same powder when cool a second time upon the shovel, and it will not phosphoresce again unless meanwhile it has been sufficiently exposed to light. Here we have the results of luminous energy stored up by some means in powdered fluor-spar without any evidence of the intervention of chemical decomposition. Professor Dewar has stored up the phosphorescent energy of luminous paint spread upon a glass plate, by keeping the plate at an excessively low temperature for days or weeks; on taking it from its frigid receptacle and breathing upon it, once more it begins to shine in the dark until its original normal amount of phosphorescent energy is exhausted. He has facilities at the Royal Institution for producing the extreme low temperature necessary, as there are appliances on the premises by which even oxygen can be liquefied by intense cold and pressure. An analogy upon a large scale may now be given. Suppose the earth to be an atom of chlorine and the sun to be an atom of silver, and their present relations in the matter of distance to be normal. At the present time the elliptical orbit of the earth is so nearly circular, that if it were to be drawn to the reduced scale of a yard in diameter upon the wall, it would be necessary to measure it for the observer to make sure that it was not a true circle. Because of the perturbations set up by the planets, it at times assumes a very elliptical form, so as to give the earth a short, blazing summer and a very long, cold winter; indeed this furnishes the foundation for the hypothesis most popular with astronomers as to the cause of the glacial epochs. It takes many thousands of years for the orbit to change from its most circular to its most elliptical form, and in the latter case, when the earth is farthest from the sun, evidently its attraction by the sun is weakest, and it is more liable to be separated from the sun should any stronger attracting body come near enough. Here then on a large scale we have something indicating that upon a small scale modifications set up by a disturbing force in the relative motions of two adjacent particles of matter may possibly last for an exceedingly long time. In intermolecular motions there may sometimes be small tendency when a change, say, in merely the plane of atomic vibrations is set up for the particles to return quickly to their normal positions.

The established discoveries of modern science in relation to molecular physics cannot be excluded from photography, and as atomic motions invariably underlie and precede chemical changes, they must be taken into account in any chemical, physical, or other hypothesis of the production of the latent image by light.

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SUIT THE PRESENT TIME.—A subscription to the BULLETIN.

HYDROQUINONE.

To the Editors of the BULLETIN.

THIS article seems to be little known at present, but I am of the opinion that when it has been tried by more of our professionals and amateurs it will be better understood and brought largely into use. I find its name spelled in four different ways, viz, hydrokinon, hydrokinone, hydrochinone and hydroquinone. As to which one is correct I shall not debate, as long as I receive the proper article and meet with such success as has attended my experiments thus far.

I mixed a developer after formula as given me by Dr. Piffard, viz.:

Hydroquinone (Merck's)	100 grains
Carbonate of potash	300 "
Sulphite of soada (crystals)	400 "
Water	20 ounces.

Mix and filter and it is ready for use, and after having developed all you wish return to the bottle for future service. With a pint of above I have developed many 5 x 7 plates and it seems to work as actively as on the first one. The exposures were varied, some being instantaneous, others longer, depending on light and diaphragm; some by magnesium flash.

In a test of developers on plates exposed by the flash, where the soda and pyro gave me cloudy borders on the edge of the plate, and appearance of forced negatives, the hydroquinone left the edges clear and transparent, and the negative of an excellent printing color. The details in the shadows were much better and the entire negative softer and rounder. Wondering how the same developer would answer for lantern slides, I printed several of Anthony's transparency plates under some of the negatives, and the developer gave me most pleasing results. Some I over-developed to see the effect, but the clear parts were void of all cloudiness and a very rich color, nearer that of the Ferrier slide than any others I have seen. It does not stain the hands to the same extent as pyro, and I am sure that if your readers will give this article a trial they will never be without it.

Heretofore my developing has necessitated six bottles of solutions—pyro, alkali and bromide for negatives; oxalate, iron and bromide and citric acid for lantern slides—but with this new (?) article I resolve all down into one bottle. When it becomes too weak for negatives I shall test it for lantern slides, and will give you the results of the trials. I would further state that the color appears to remain unchanged even after considerable use, and standing several weeks exposed to strong daylight.

From what I have seen of it I judge it to be much more economical than pyro at its present price, and if brought largely into use will probably be made much cheaper than at present. I should be pleased to read what others have to say on the subject.

As there are often several qualities of an article in the market, I would recommend all who try this developer to use the hydroquinone made by Merck, which I use, and thus be certain that they will have no trouble from impurities in it. It is poor economy to save a few cents and lose time, chemicals, plates and patience by using an inferior article. Yours truly, INQUIRER.

All communications for the columns of the BULLETIN *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

PHOTOGRAPHY FROM ONE POINT OF VIEW.

BY EDWARD DUNMORE

(Continued.)

THE more skillful the composition and the better the judgment shown in lighting, the more a work of art a photograph becomes. In these two directions photographers should especially try to improve themselves. Their appliances may be more difficult to work with than those of the painter to obtain results of an equivalent pictorial value, but difficulty should scarcely be an excuse for indifferent work. I would therefore urge the study of art in its various phases by all who have a desire to produce more than mere photographs; it will not be time thrown away. Can any one suppose any accomplished painter made grand pictures as soon as he knew how to manipulate his colors? and yet many photographers expect to do so directly they have acquired sufficient skill to make a negative. The idea is absurd; years of study and practice and many disappointments must necessarily be experienced before a clever and finished work can be exhibited for public criticism. Why then should the photographer be an exception to the rule, and why should one who has really greater difficulties to contend with imagine he can make a picture (except by accidents, which in all probability can never be repeated) than a man who by laborious study has learnt, after many failures, to properly handle brushes and color? The conceit engendered by the ability to make a mere representation of a subject without the most rudimentary knowledge of draughtsmanship encourages the performer to entertain a false estimate of his own skill, a result undoubtedly prejudicial to real progress. True artists will always be in the minority; it is only here and there a man or woman without, perhaps, any decided manipulatory skill will come to the front by reason of their artistic ability. A more slovenly manipulator or more artistic photographer never lived than O. G. Rejlander. No matter how messy and defective his work from a chemical point of view, the picture was there; and, had he lived to enjoy the advantages of photographers of the present day, in all probability good manipulation would have been added to his superlative artistic treatment of subjects to which he turned his attention. With the wet plate of his day a man essentially an artist was wofully cramped and handicapped, for to make a complete success you were compelled to think of the plate. When the whole attention should be centered on the subject, this division of interest was a great drawback. Nobody knew it better than Rejlander. Now, however, we can devote our whole attention to the subject, and in the click of a shutter secure any beautiful effect, if we only know how to look for it and to see it when it presents itself. We must see a picture before we can photograph it; if we do not, it is pure accident, and can never in human probability be repeated. This is a reason why a man's skill should not be estimated on the strength of his producing one superlatively good work, for the veriest duffer is sometimes lucky in this respect, and such having received an overwhelming avalanche of commendation is a spoilt photographer for the rest of his days. The ability to see pictures varies with everybody, and to this we owe the great variety of treatment the same subject will receive at the hands of different photographers. Some are artists intuitively, some by education, and some not artists at all, either intuitively or by education, and never will be. Yet all expect to make pictures. We know they cannot, but it is little use saying so. The few go on and succeed, but the ruck never get beyond mediocrity. As soon as any one is satisfied with his work it is all up with progress; his ideal standard of perfection is a very low one, soon reached and never exceeded.

In these days of education and opportunity, photographers should be amongst the first to take advantage of our art schools, and not rest in snug contentment, fancying they are independent of anything of the kind because the schools are specially devised for instructions in drawing and painting. The means used may differ, but the aim is picture-making, and rules which govern one process will rightly influence another. The knowledge of art is one of the things to which there is no royal road, and it is only by practice, perseverance, and painstaking, that we can hope to see photography raised to that position that it will be no misnomer to call a fine art. Absolute perfection in things mundane is not to be expected, but our endeavor should be to get as near to it as possible. As a proof of how long photographers will be content to run in a groove until started out of it, we have only to go back to the time of Adam Salomon; his exhibits were so excellent and different from anything English photographers had conceived possible. Like a revelation, it could be scarcely credited that by the aid of the well-known silver bath and collodion such rich masses of light and shadow could be produced, but they were. Then there was the pose and composition of the pictures. Nobody had conceived portraits arranged with such simple grace and so brilliantly lighted without hardness could be made by photography, but they were. The only difference was the process was directed by a master's hand, that was all. From the time his pictures were exhibited, English photographers began to see the tools they worked with were capable of much more than they had suspected, and a vast improvement in portraiture and artistic management of the picture immediately took place.

With landscape work there is no such thorough revolution likely to take place, for as good pictures were taken years ago as now of the subjects to which photographers were then restricted. The most charming effects of light and shade were reluctantly passed; the prompt exposure at the right moment was well nigh impossible, for by the time the wet plate was ready the effect was gone. Photographers were in consequence limited to evenly lighted views. The uniformity accruing from this cause gave rise to the depreciating term "photographic" when applied to other pictures. Now, however, the rapid dry plates have placed the long wanted power of being ready at a moment's notice in the photographer's hands, and any effect, no matter how transient, may be secured. The abuse of such power by exposing on anything that comes must be avoided, and there is no doubt that when the novelty wears off it will be. We now have a grand chance of making real pictures, and such that we scarcely did more than dream of formerly; we have, therefore, a right to expect a corresponding improvement in our work.

[*From the Photographic News.*]

PORTA: HIS LIFE AND WRITINGS.

BY WILLIAM LANG, JR., F.C.S.

Among the many philosophers who flourished during the sixteenth century there is one name which to those interested in photography stands pre-eminently forward. Porta and the camere obscura have now become indissolubly associated; and what may be considered as something exceptional, no other claimant has ever been put forward to divide with Porta the honor accruing to so great and important a discovery. Notwithstanding the great interval in time between our own age and that of the Italian philosopher, the story of his life is not altogether unknown to us. That he was a most prolific author, writing on almost every conceivable subject, the sequel will abundantly show; and although many of his notions may now seem childish and grotesque, still it must be remembered that among men of his stamp astrology and the old alchemical notions regarding the transmutation of metals were matters of belief.

His name in full was John Baptista Porta, or, in his mother tongue (the Italian), Giambattista della Porta. He came of an old and noble family, and was born at Naples about the year 1543. He was brought up under the care of an uncle, who seems to have been a well-informed man, and who spared no pains to develop his nephew's talents. Porta's chief companion was his brother Vincent, whose ardor for learning equaled that of his more illustrious brother. At ten or eleven years of age he was able to write in Latin, and it is said that his compositions were a matter of surprise to those who were his teachers. Porta took great delight in reading the works of the philosophers who had preceded him, and this naturally turned his ideas towards cultivating the sciences. Old manuscripts were eagerly perused by the youthful scholar, and when he had exhausted all that Naples could offer him in this respect, he traveled through Italy, France and Spain, visiting the libraries of the respective countries. He lost no opportunity of meeting with the foremost men of his time, and was fond of eliciting information from workmen regarding their particular handicraft. Porta thus became at the age of fifteen a prodigy of learning, and it is alleged that at that early period of his life he had already written the first four books of his famous work, "Natural Magic." On his return to Naples he became one of the founders of the Academia del Oziosi.

A short time afterwards he established in his own residence another academy, bearing the name of De Secreti, into which no one was admitted as a member who had not the necessary qualification, which was the discovery of some secret, useful either in medicine or affecting natural philosophy. In a short time—due doubtless in a great measure to the mysterious name that had been given to the academy—rumors affecting its members went abroad. It was supposed that the secret meetings were carried on solely for the purpose of cultivating the magical arts, and accordingly Porta had to betake himself to Rome in order to justify himself at headquarters.

The Pope at that time was Paul III, and it would appear that our philosopher had no difficulty in clearing himself from the unjust suspicions raised against him and the society, although the supreme head of the Church thought it necessary to suppress the academy, and extort a promise from Porta that for the future he would abstain from practicing anything that would savor of the black arts. While at Rome, Porta was eagerly sought after by all the learned men of that city, and during his stay he was admitted a member of the then famous Academia dei Lincei. This was in the year 1610. On his return to Naples, notwithstanding papal threats, he still cultivated the natural sciences. In his house, aided by his brother Vincent, he had established a collection of all sorts of natural curiosities, and, as it was thrown open to the inspection of strangers, we find that it was visited by the Frenchman Peiresc, and from what he relates, both regarding what might be termed the museum, and Porta himself, a very good notion can be formed of the Italian philosopher and his ways. Curiously enough, although his taste for the cultivation of science had weaned him from literature, in his old age we find him returning to it. He composed several pieces for the theatre which were received with favor. We shall refer to these in a subsequent article. Porta never married; it is said that he was afraid that by so doing other affections would usurp those he had for his brother. He died at Naples on February 4, 1615, and was buried in a tomb which he had caused to be built in the church of St. Laurent.

ORANGE BLOSSOMS.

A VERY interesting home wedding took place at 259 West 52d street, New York City, on the evening of Thursday, December 1st, between Miss Kate Paulding Uglow and Dr. Arthur H. Elliott, associate editor of Anthony's BULLETIN. Fragrant flowers adorned every mantel, nook and corner, and a large number of guests were assembled. The bride was handsomely dressed in white silk and point lace, with veil and wreath of orange flowers. The ceremony was performed by the Rev. Dr. A. R. Van Nest, and a reception, with music, was followed by an elaborate supper.

Among those present were Professor and Mrs. C. F. Chandler, Dr. and Mrs. A. A. Julien, Dr. and Mrs. Louis H. Laudy, Professor J. Le Comte Stevens, Dr. E. L. Wilson, of the *Philadelphia Photographer;* Messrs. E. Anthony, R. A. Anthony, Colonel V. M. Wilcox, Dr. R. W. Wilcox, Mr. and Mrs. E. B. Barker, Mr. and Mrs. W. H. Bradley, Dr. and Mrs. Albert P. Hallock, Dr. and Mrs. Everett S. Warner, Mr. and Mrs. John C. Laudy, Mr. and Mrs. L. C. Laudy, Mr. and Mrs. C. Laudy, Mr. C. P. Ross and daughters, Miss Jennie B. Ross, Mr. and Mrs. Foster and Miss Jennie Foster, Mr. T. D. O'Connor, Mr. M. J. O'Connor, Mr. W. P. Little, Mrs. R. V. N. De Nyse and Mr. Morton De Nyse, Mrs. H. L. Sadler and Mr. Ogden Parker, Mr. Stephen D. Horton, Dr. Stephen F. Horton, Mr. Alfred L. Beebe, Mr. Edward Laudy, Mr. H. F. Friese, and Mr. Geo. F. Fisher.

The happy couple have our best wishes and congratulations. I.

OUR ILLUSTRATION.

We are very much pleased to be able to give an example of the fine work in photographic portraiture which we present to the readers of the BULLETIN with this issue. As the years roll on, Mr. Dana, of New York, rises to higher and higher levels of beauty in artistic photography. His graceful posing, always with truly artistic feeling, is a most captivating characteristic of his work. The careful study of light and shade to secure perfect modeling in the subject is beyond question the highest grade of this kind of *technique*, while the harmonious tone and finish found in all his pictures, shows that the use of the celebrated N. P. A. paper is well understood by him, and the fine results obtained tell of the skill of a master hand.

THE MAGNESIUM LIGHT.

BY A. P. HOWARD.

In the BULLETIN of the 12th ultimo a formula was given for a magnesium light, as follows:

Chlorate of potash	2 parts.
Sugar	1 part.
Magnesium powder	1 "

I tried the above mixture, using 1 gram potash and ½ gram each of the other ingredients, using a plate of about No. 22 on the sensitometer. The result was an under-exposed negative. The experiment was repeated omitting the sugar, and a fully exposed negative was easily developed with pyro and potash.

The sugar gives a much less brilliant light, as it absorbs oxygen and thus prevents its full action on the magnesium. This could be remedied by using more potash, but the light is not as white when sugar is used, and consequently less actinic.

A convenient way of setting off the mixture is to place it on a small piece of paper and set fire to the latter, which should rest on a piece of sheet tin or iron. If in a furnished room it should be placed inside a box with a glass front and a hole cut, some two or three inches in diameter, in the top; otherwise the oxide of magnesium produced will cover everything with a white powder.

LETTER FROM JEX BARDWELL.

DETROIT, MICH.,
November 21, 1887.

To the Editors of the BULLETIN.

At the last meeting of the Photographers' Association of America its members were pleased to remember some services that I did for the craft in times gone by; services that I gave at the time without expectation of fee or reward. Knowing the power I possessed, to have withheld it would have been a disgrace to my own feelings that would have followed me through life. To make that knowledge available I had to make a sacrifice, no less than closing my gallery for the time that I might be absent. This I did on two occasions when my presence was required in Philadelphia and Chicago, and at a time when I was doing as good a business as any gallery in Detroit. But the success in lifting a burden from the craft that would have been felt by every individual photographer in the land was of itself a sufficient reward, and of which I have had reason to feel proud.

Now, when traveling on the down-hill of life, with sadly impaired eyesight, and struggling in the battle of life, the brethren of the Photographers' Association of America have been pleased to stretch out their hands with substantial aid. The unanimity with which it was done is exceedingly gratifying to my feelings, and for this aid I wish to make public acknowledgment; as also for the individual gift of President G. Cramer, of $50.

I feel some delicacy in writing on this subject, but the gift to me was a public one, and it is due to the brethren of the association to state publicly that I feel very grateful to them and President Cramer for their kindness, and I hope they will never have reason to regret it; nor that any one of them will be left unprovided for when approaching the end of their journey.

Respectfully and fraternally, JEX BARDWELL.

[*From the Photographic News.*]

THE LATENT OR DEVELOPABLE IMAGE.

BY CHAPMAN JONES.

THE researches of Carey Lea that have recently been published have yielded results of great value, but as soon as the investigator has left the safe realm of experiment for the doubtful ground of inference, he makes statements which do not carry conviction with them. I refer particularly to those paragraphs that deal with the latent or developable image, and I think that it will not be difficult to show that the experiments which are supposed to support a certain theory are strong arguments against it.

It is a thankless task, the endeavoring to put out what was hoped to be a little light on a very dark problem ; but a false light is worse than no light at all, for it not only leads astray, but hides the feeble gleam of truth.

There appears to be no *prima facie* reason to doubt the accuracy of the experimental results that Carey Lea has set forth, and for our present purpose therefore we will assume that these are unimpeachable.

He finds that when the chloride, bromide, and iodide of silver are exposed to light they lose a small, but not definite, amount of the halogen, and that the chemical properties of the products are different from those of a mixture of the subsalt with the unchanged salt, and also different from a mixture of the unchanged salt with metallic silver. He therefore suggests that although a subsalt of fixed composition is formed (this much in deference to the accepted notions of chemical compounds), this subsalt combines in an indefinite proportion with the unaltered salt (this to reconcile his theory with his experiments). These indefinite and ever-varying compounds he names photosalts, and it is convenient to use this name to avoid circumlocution.

The photosalts he also produces, without the aid of light, by means of a large assortment of chemical reducing agents, and also by the action of oxidizing agents upon metallic silver. But what we need especially to remark is that these photosalts are produced by the action of light, and that they have a remarkably great tinctorial power. He says distinctly that "as little as half of one per cent. of subsalt combined" gives a "strong coloration," and that a quantity "inappreciable to analysis is capable of affecting the color." A preparation containing two and a half per cent. of subsalt is described as of a purple black-color.

(*To be continued.*)

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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

THE second informal meeting of the section was held in the Trustees' room of the Institute on Wednesday evening, November 16th.

President NEWTON, on taking the chair and calling the meeting to order, inquired if the Executive Committee had marked out any special order by which these meetings should be conducted?

Mr. J. B. GARDNER replied by saying that these meetings were intended to be quite informal; that the only order to be observed was that when any member introduced a question or subject, no other theme should be considered until all present, who desired, had had the opportunity of expressing their views concerning the matter. In this way a varied experience might be brought to bear upon all subjects introduced, and thus help to solve many problems relating to the art and science of photography.

Tbe *President* then called the attention of the members to a letter which he had just received from an isolated member of the fraternity who desired information concerning the making of albumen paper.

As a large majority of those present appeared to have no disposition to all speak at once on this subject, your reporter took it for granted that the questions contained in the letter would have been passed over had not the inquirer apparently been beyond the reach of a commercial albumen paper much more reliable, and of better quality than the most gifted amateur could dream of making for himself without the capital, the appliances, and experience employed in the factories that now supply the photographic stock houses in all large cities, both in Europe and America.

In a company however like that of the Photographic Section, composed of both chemists and philosophers, artists and doctors, practitioners and theorists, there is seldom a question broached that is allowed to escape discussion, and so this one was taken up by a learned doctor, whose profession it is to answer the many questions that come with the patronage that support our most enterprising photographic stock houses.

There were also a number of the questions under consideration aptly responded to by *President* NEWTON; but as most of these have already been recorded in the leading photographic journals at home and abroad, it is not needful to reiterate them here.

The *President* also submitted a number of lantern slides to the friendly criticism of those present, at the same time stating that they were made on ordinary dry plates, and that it had been his endeavor, while making them, to avoid, as far as possible, that hardness, so often accompanied with brilliancy, noticeable at most lantern exhibitions. The lantern of the Institute not being ready for use, the further demonstration of his purpose was postponed to some future evening.

Mr. O. G. MASON then introduced the subject of the flash light, stating that he had brought with him a number of compounds that might be used for that purpose, and desired while they were being experimented with, that those present should judge of their comparative actinic merits. He also exhibited a metallic holder for these compounds and a convenient and simple contrivance for igniting them. As this could be easily and safely held in the hand during their combustion, it could be readily ascertained how the subject or object to be photographed could be the most effectively lighted.

The materials used in making these compounds consisted of chlorate of potash, nitrate of potash, magnesium powder, white sugar, gun-cotton, and zinc powder. These were used in a variety of combinations, and as they were fired the auditors passed their verdict as to their relative actinic value.

The compound most favored consisted of chlorate of potash, magnesium powder, and white sugar. Next in actinic effects was the magnesium powder and gun-cotton. The least effective of all was the zinc powder and nitrate of potash.

These experiments called forth many valuable suggestions and remarks from Drs. Van der Weyde, Miller, Ehrmann, and others whose names were not announced.

As no special room had been provided for these informal or social meetings, a resolution was passed that the *Secretary* consult with the Trustees of the Institute and obtain from them, if possible, the privilege of continuing the meetings in the same room.

It was announced that at the next regular meeting, December 6th, the *Vice-President* of the Section had consented to read a paper entitled "Photo Shavings."

The meeting then adjourned.

BOSTON CAMERA CLUB.

A SPECIAL MEETING was held at the rooms, 50 Bromfield street, on Wednesday evening, November 23d.

Nearly two hundred good slides were selected from among those offered for the American interchange, out of which the committee will cull the one hundred needed.

The club has just adopted a standard mat for lantern slides, designed and printed by William Garrison Reed, the object of which is to secure more uniformity in the size of the opening. The shape may be square or oblong (with round or square corners, or with arched tops, or round or oval), but the measurement, either from top to bottom or from side to side of the opening, must be standard.

The regular monthly meeting of the club was held on the evening of the 1st instant at its rooms, 50 Bromfield street.

Messrs. Charles J. Dennison and Edward H. Lyon were elected to active membership, and the resignations of Messrs. W. H. Robey and E. Sonnenbrodt were read and accepted.

The *President* announced that the limit of membership had been reached, and that there was already a small waiting list.

It was, on motion, voted that such waiting applicants as have been approved by the Committee on New Members be invited to attend the meetings of the club without voice in the management or right to use the rooms.

An Auditing Committee, consisting of Messsrs. H. N. Sweet, R. A. Bullock, and John L. Curtis, was appointed to audit the accounts of the Treasurer for 1887.

A committee, consisting of Messrs. H. N. Sweet, J. G. Hubbard and W. G. Pitson, was appointed to canvas the nominations of officers for 1888. They reported the following list.

GEORGE E. CABOT, *President;* FRANCIS BLAKE, *Vice-President;* EDWARD F. WILDER, *Secretary,* WILLIAM G. REED, *Treasurer;* W. S. BRIGGS. *Librarian;* H. N. SWEET, R. A. BULLOCK, C. H. CURRIER, *Executive Committee for three years.*

Mr. WILDER exhibited some metal forms for making lantern slide mats, which were regarded with favor by those present, and he was requested to furnish two sets for the use of the club in connection with the standard mat of Mr. Reed, which has been recently adopted by the club.

Mr. SWEET gave notice of a proposed change in the By-Laws, making Monday instead of Thursday the meeting night. The suggested change received unanimous approval, and will be definitely acted upon at the January meeting.

The election of three members of the Exhibition Council to represent this club was referred to the Executive Committee with full powers.

Mr. Reed is to be at the rooms on Thursday, December 8th, from 7.30 to 9, to assist members in mounting slides, and explain the use of the new standard mat.

Mr. PRESTON exhibited two negatives with prints, the first very much over-timed and flat, the second (made from the first through the medium of a transparency) was very strong and brilliant. The difference between them was very distinctly marked, and showed skillful handling.

The next meeting of the club will be on the 17th. EDWARD F. WILDER,
Secretary.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

THE regular meeting, held on November 21st, was called to order by *President* BAIN.

The minutes of November 2d were read and approved.

Messrs. C. L. Hammerswein, C. W. Melcher, W. M. Jaccard and C. M. Seaman were elected Active Members of the Association, and the *Secretary* was directed to notify the candidates of their election.

Mr. BAIN gave notice of a proposed change in the time of meeting of the association, which is now fixed by the By-Laws on the first and third Mondays of each month.

The application of Mr. John F. Shepley for active membership was referred to the Membership Committee for investigation.

There being no further business, the association adjourned, to meet on Monday, December 5th, at 8 P.M.

After the meeting was over, the lantern slides intended for the interchange of the current year were exhibited on the screen, and were then placed in the hands of the Lantern Slide Committee for examination and selection.

W. M. BUTLER,
Secretary.

HONESTY ALWAYS WINS.—Irate citizen: "See, here, sir, that land you sold me is under water half the time."

Real estate man: "Yes, I supposed you wanted it for a fish pond. Don't see what you bought it for if you didn't."

Irate citizen: "Great snakes! Why didn't you say it wasn't fit to build on? How was I to know the Missouri River had a mortgage on it."

Real estate man: "I stated the fact that it was very low land in my advertisement."

Irate citizen: "Never said a word about it."

Real estate man: "Oh, you're mistaken. It was in great big type: 'Land for Sale. Very Low.'"—*Omaha World.*

Bibliography.

PHOTOGRAPHISCHER ALMANACH UND KALENDER FUR DAS JAHR 1888.

Promptly on hand comes this well-known annual of Ed. Liesegang, of Düsseldorf. It is illustrated with a very pretty marine view by aristotypy; a portrait of Emil Rabending, made by the Autotype Company of Munich; an example of "Leimtype" by Professor Husnik; and a picture by a new Lichtdruck method of Adolf Schwarz, of Düsseldorf. As usual it contains a number of methods of practical value by some of the best German photographers, and a number of useful tables. It will be welcome to our German readers.

WILSON'S QUARTER CENTURY OF PHOTOGRAPHY. SECOND EDITION. By Edward L. Wilson, New York.

It seems but the other day that we looked over the pages of this handsome volume in its first edition, and now ninety days after, a second edition is out. Surely such an unprecedented sale of a truly valuable volume is greater proof of its worth than any words of ours. We repeat what we thought when we looked over this thoroughly practical work before, that it will prove a true friend to every professional and amateur photographer, and it will be many years before its equal in value will be presented to the photographic worker.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—L. E. T. writes: Find inclosed a picture taken in the camera on bromide paper. I expected to get a positive, for I saw in the last BULLETIN, page 704, question and answer saying the new bromide paper could be used in place of ferrotype plates. What is the trouble; is it in the paper or me?

A.—The result you have obtained is a perfectly correct one. We did not intend to indicate that you could use bromide paper exactly as you would ferrotype plates. Possibly the question was misunderstood. We meant in the answer to convey the idea that it could be used for rapid work as a substitute for ferrotype plates, producing a picture in a few minutes. The method of procedure would be: Make a glass negative on a tropical plate, which can be dried rapidly over a lamp, then expose bromide paper under this negative and develop as you have done with the negative you send. But better than all this is the new argentic dry plate, which is a ferrotype dry plate, and with a little practice the results obtained are very good, the chief difficulty being in the development, which should be conducted strictly in accordance with the directions given with the plates. By oiling the negative you have sent, taking care no surplus oil remains, except that necessary to make it more transparent, and then exposing in a printing frame for a second or two with another piece of bromide paper, you can obtain a positive by development; but in making a glass negative as mentioned above on a tropical plate, the drying can be accomplished by heat in a few minutes.

Q.—W. R. writes: Will you please state if you know of any varnish that can be applied to the surface of finished and mounted photographs as a substitute for glacéing or burnishing? If so, where to be obtained or how made?

A.—There is no substitute for glacéing or burnishing. To obtain such a fine surface is an impossibility if varnish of any kind is used, as there is always a streaked appearance from the hairs of the brush used. Possibly some method of using a varnish by flowing over the surface might be successful, but we have never seen any good results this way.

Q.—A. W. B. writes: Will the BULLETIN please instruct me how to fix over a silver bath when it fails to silver the negative properly?

A.—You do not say in what particular manner it fails to silver the negative. But a good method is to make the bath alkaline with ammonia and place it in the sun for a few hours (or boil it), then filter, make *just* acid with c. p. nitric acid, and then make up to strength by adding new silver nitrate. But a great deal depends upon how bad the bath is, and it may be cheaper to precipitate it for waste and make up a new one. Try the above experiment on a small quantity of the bath first, so that you may judge how it will work on the whole.

Q.—F. H. H. writes: I cannot get the right color upon my prints; they always have a light brown tint when they are toned. What is the trouble? Also can you help me on the new argentic plates? I have obtained some good pictures on them, but sometimes fail. I think it may be in the developing.

A.—The principal trouble with printing and toning is from lack of sufficient printing. This also depends upon the negative. You cannot get a good picture from a thin negative; the print will be flat and lack contrast because you cannot print deep. If you have a good negative, print so deeply that the details in the shadows are entirely blocked up; it will come out all right in the toning and fixing afterwards. As a toning bath use gold chloride, about two grains in eight ounces of water, and add to the bath ten grains of common salt and enough carbonate of soda to make it turn red litmus paper decidedly blue. With deep printing on fumed paper, and then washing in water with one dram of ammonia in the quart, the above toning bath will give tones from a rich brown to a deep blue-black, according to the depth of the print. In regard to the argentic plates, they must be developed with great care to insure uniform results. The directions given in the boxes should be strictly followed.

Q.—J. S. writes: Please tell me, through the BULLETIN, how to vignette in the camera in copying and enlarging from a small negative to a transparency on opal plate, to be viewed by reflected light.

A.—You should proceed in the same manner as in vignetting with a printing frame. Place inside your camera the oval or the opening at any convenient distance between the lens and the ground glass, and you will obtain the desired gradation of light upon the screen. Of course the oval or vignette form must be of a dead black color, to prevent reflections in the camera.

Q.—D. T. G. writes: Will you kindly answer this question in the BULLETIN for me? A few days ago I made a gelatine emulsion, which was spoiled by letting the light strike it. How can I recover the silver? I have tried to precipitate with an excess of salt, but find the gelatine is precipitated with it. I have tried all the ways I know of, but cannot separate the two. If you can advise me you will save several ounces of silver, and perhaps help others out who have had the same trouble.

A.—Thin out the emulsion with hot water, and add slowly to the hot liquid about eight ounces of strong sulphuric acid for every ten gallons of fluid. By this means the setting properties of the gelatine are destroyed, and the whole remains fluid enough to allow the silver bromide to settle.

Q.—A. W. N. writes: As I am one of the readers of the BULLETIN I would like to ask a few questions, which please answer through its columns. It will do me good and also all your readers. What effect does pyrogallic acid have in the developer? What is its nature? Does it act as a retarder or does it bring up the details? Also what is the effect of bromide of ammonium, bromide of potassium, sulphite of soda, carbonate of soda, and carbonate of potassium? By giving the effect that these chemicals have in the developer I know you would help a great many artists. It gives me pleasure to know we have such a helping hand in this matter. I think I know all the above, but am not quite sure. By answering you will do me a great favor.

A.—Pyrogallic acid, or more properly pyrogallol, is the active reducing agent in the developer; *i. e.*, it breaks down the silver haloids that have been acted upon by light, to metallic silver, which forms the photographic image. If it is fresh it produces contrast in the picture, and the more fresh pyro there is present up to (say) ten grains to the ounce of developer, the greater will be the contrasts in light and shade in the negative. On the other hand old pyro in a developer acts as a retarder, in almost the same manner as the bromides of ammonium and potassium, although not so strongly. The details in a picture will be brought up by a proper adjustment of the pyro and alkali (potash or soda). If much pyro is present, then a moderate quantity of alkali only is needed; but if little is present then more of the latter is necessary. Strong alkali with old pyro will cause fog, and too large a quantity with much pyro will produce the same effect. Both the bromides are strong retarders, and should be used sparingly. Sulphite of soda is used with pyro to prevent stains on the negative. Carbonate of soda gives softer negatives than carbonate of potash, which latter gives the stronger contrasts. Carbonate of potash also has a strong tendency to produce frilling. A mixture of the two carbonates is in our judgment the best form of alkali for general work in landscape, while soda alone works best for portraiture. All alkalies act as accelerators; that is, they make the pyro do the work.

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Views Caught with the Drop Shutter.

J. H. Dallmeyer, the well-known optician of London, sends us a handsome volume of the "Industries of London," and from it we take the following items of information. The Dallmeyer Optical Firm was established thirty years ago by the father of the present proprietor. The work of the firm is characterized as "the finest products of inventive genius and mechanical skill." They hold a large number of gold medals for skillful work, and the senior Mr. Dallmeyer was decorated with the Cross of the Legion of Honor of France. The work of this firm has increased so much lately that they have had to double the size of their manufactory. Such is the reward of skill and the maintenance of a high standard in the work sent out to the world.

Schumann's *Southern Photographic Bulletin* still continues in its sphere of usefulness and comes regularly to our table. We agree with the editor that all wideawake photographers should read at least one photographic periodical; we don't care which one, but at any rate read *one*. Of course we should like them to have our Bulletin, but are not greedy. Our lists continue to grow, and we steadily improve our journal rather than make spasmodic efforts to catch subscribers.

Messrs. Crosscup & West send us a very pretty sample of work done by one of their process methods, an interesting picture of a little child made from an Ives block. This well-known firm continues to maintain the high grade of work for which they are justly noted. We hope at an early date to give our readers another sample of their fine method of photo-mechanical printing.

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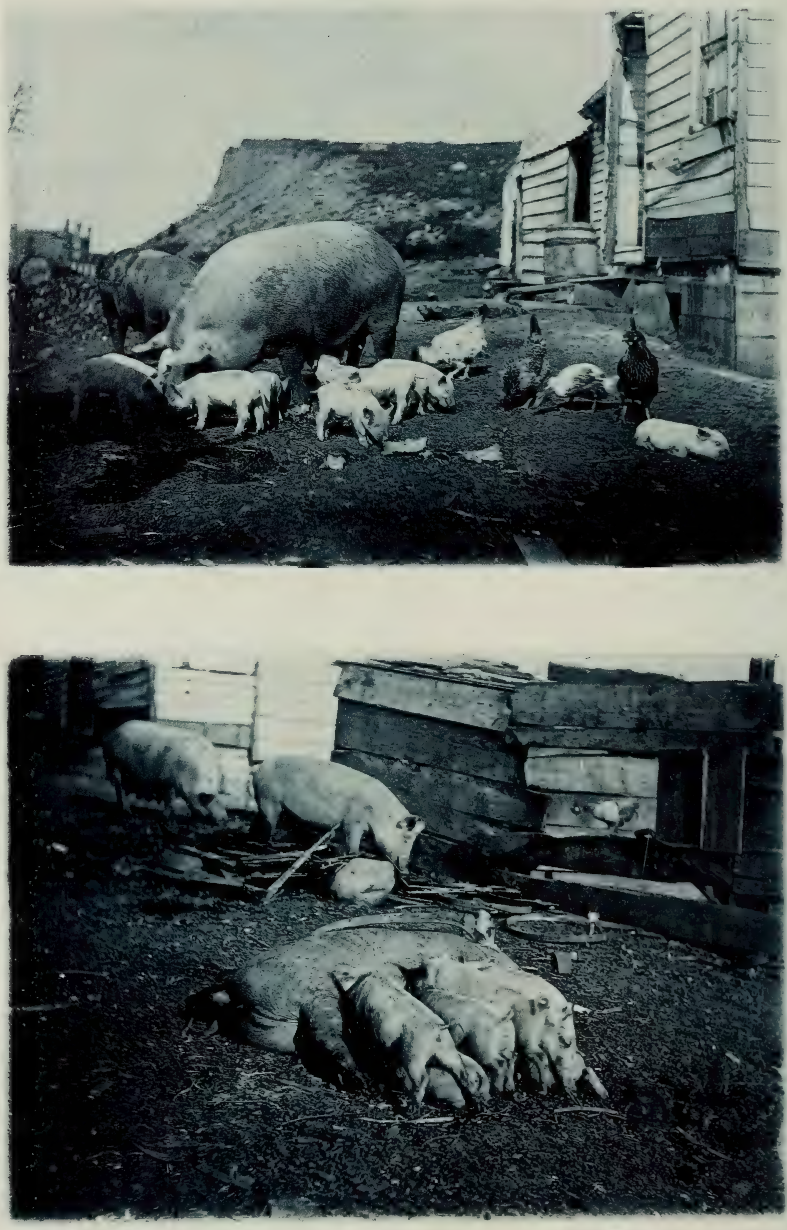
Evening Post Job Print, N. Y.



Indotint Process. Am. Photo L. Co., N. Y.

BARN-YARD STUDIES,

BY

G. W. WUNDRUM.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

DECEMBER 24, 1887. Vol. XVIII.—No. 24.

COLD WEATHER AND PHOTOGRAPHY.

THE season is now upon us when all kinds of complaints and inquiries about difficulties in photographic manipulations crowd our table, the principal cause of which is the advent of cold weather. Every year we are deluged with these letters and therefore take this opportunity to call the attention of our readers to some of the pitfalls and snares that are to be avoided when "Jack Frost" is master of the situation. Our attention was recently called to the influence of cold weather on photographic work in the return of some plates to the dry plate manufacturer because they would not develop. On looking into the question it was found that the plates were perfectly good and developed beautifully, leaving nothing to be desired in the density, clearness, and detail of the negatives; but on questioning the operator it was found that he had used a cold developer, and still further inquiry showed that it was only two degrees above the freezing point of water, or at thirty-four degrees Fahrenheit. Now this is not the temperature that dry plates are expected to develop at in any reasonable amount of time. Of course development would take place at such a temperature, but it would require an amount of time that is not worth wasting upon them when at the proper temperature (sixty to seventy degrees Fahrenheit) a properly exposed plate will develop in five or ten minutes. Another difficulty that arises with developers in cold weather is the crystallization of the sulphite and carbonate of sodium in the bottom of the bottles and the consequent weakening of the developing power of any given volume. This is particularly true when solutions are used that are saturated at ordinary temperatures (sixty degrees Fahrenheit), and applies equally well to ferrous sulphate and potassium oxalate as it does to the pyrogallol and soda developers. Great care is therefore necessary to keep all the various solutions used in developing at a moderate temperature, and in such positions in the studio and dark room that they cannot be suddenly chilled and their normal developing power diminished. There is too much carelessness in this matter, both with professional and amateur photographers; and manufacturers are blamed severely for difficulties that are solely due to the indifference or utter disregard of circumstances by the manipulator of dry plates.

Another fact that should not be lost sight of in cold weather, is that solutions that differ much in temperature will produce frilling upon dry plates. If for example the developer is at forty degrees Fahrenheit and the alum or hypo baths are at seventy, there will be a strong tendency to frilling exhibited by most of the brands of plates now upon the market, unless tropical plates are used.

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The influence of cold weather is not confined to the manipulations necessary to the production of the negative; but the making of albumen prints is even more open to difficulties. Blisters, measles, and such troubles are almost invariably due to having the various printing and fixing baths at too low a temperature; or, what is far more dangerous, at very different temperatures. A little thought of difficulty that may arise in printing is the staining of unvarnished negatives from contact with the silvered paper. This may come about after this manner: A negative is brought from a cold room into a warm one and the moisture in the atmosphere begins to condense on its surface in the form of dew. Owing to the dullness of the surface of the gelatine this is not often noticed, and on placing the sensitized albumen paper into contact with it in the printing frame the silver nitrate passes into the gelatine film and stains the negative.

We have submitted the above observations to our readers because the particular time of the year is now upon us when difficulties of the character we have mentioned will constantly occur; and there is a good old adage which says, "Prevention is better than cure."

EDITORIAL NOTES.

It has hitherto been supposed that special dry plates were needed for the making of lantern slides. Mr. Henry J. Newton, President of the Photographic Section of the American Institute, has recently been experimenting upon this question, and has come to the conclusion that such special dry plates are not only unnecessary, but they tend to the production of hard pictures and a snow-like effect in the high lights. He is of the opinion that a plate that will make a good negative will also make a good transparency, and he has shown us a number of beautiful examples of lantern slides that bear out his statements in a very thorough manner. Our readers will find Mr. Newton's remarks in our report of the Photographic Section of the American Institute.

The United Exhibition of the Photographic Societies of New York, Boston and Philadelphia will take place in Boston early in the spring of 1888. Our Boston friends are already moving in this matter and issuing invitations to the various societies through the country to send in exhibits. We understand that the rules will be the same as those under which the exhibition was held in New York last spring. Foreign prints may be sent unmounted on wooden rollers, and will be mounted properly and framed after arrival. We heartily commend this exhibition to all our readers, and hope that the same (or even better) success will result as was attained in New York. Further information can be obtained from Mr. Edward F. Wilder, 50 Bloomfield street, Boston, Mass.

We note that it is proposed to change the name of "The Society of Amateur Photographers of New York" to "The New York Camera Club." It appears to us that the change will be an acceptable one. We have always thought the present name a long and awkward one, and the one proposed is certainly sufficiently comprehensive. Furthermore we are always pleased to note any change that will tend to break down the foolishly erected barrier between professional and amateur photographers when meeting for the benefit of the art. There is no question in our minds but that every professional photographer with advanced ideas will encourage any effort to foster the progress of photography, for as the art advances he is raised to a higher level in his profession.

By a unanimous vote of the Executive Committee of the Photographers' Association of America, the subject "Hiawatha" has been selected for illustration in making pictures for the Blair Prize Cup competition for the Convention of 1888. We are glad to note this early decision of the committee and hope that many competitors will have pictures for this beautiful trophy. Remember it is a handsome silver cup that will hold fully a gallon, and the design is thoroughly in keeping with the fine work of the house of Tiffany & Co., of New York.

The Fourth Annual Exhibition of the Providence Amateur Photographic Association appears to have been quite a success. From twenty-two members there were three hundred and sixty-eight pictures arranged on boards of black and red velvet in a very artistic manner. The prize pictures were: For best silver print, Edmund Q. Gladding; for best bromide print, R. Clinton Fuller; for best transparency, E. Q. Gladding; for best lantern slide, Robert I. P. Mason. Among the more notable exhibits are those of Mr. R. C. Fuller, the President of the Club, which include several views of the night blooming cereus, taken at 9 P.M. with magnesium light. As a whole the exhibition is pronounced a decided improvement over that of former years, and shows a marked progress in its members.

We have before us one of the best examples of an interior taken by the new magnesium flash light that we have seen. It is a view of the parlor of Mr. C. E. von Sothen, with that gentleman reclining in an easy chair. We understand that the process used was a modification of the ordinary method of procedure, and we must congratulate Mr. von Sothen on his wonderful success. The picture is uncommonly full of detail in the shadows, a point of weakness in the ordinary methods of using the magnesium light. We hope at some future time to be able to give our readers some details of this new method of procedure. The more we look at the picture the more we are delighted at the success of the method; the beautiful detail in the drapery, the paper-hangings, and the lace curtains, all show that the process is an unusually successful one.

The readers of the Bulletin will remember that several years ago we published a series of articles on "How to Photograph Microscopic Objects," by Mr. I. H. Jennings, and these are to-day the best series of papers ever written upon this subject. We regret to hear of the death of the author of these papers, and furthermore note that his widow and child are thrown, through no fault of their own, in circumstances verging on poverty. Dr. Maddox, the well-known inventor of the gelatine dry plates, makes an appeal for these unfortunate ones in our English exchanges, and we would very gladly assist in obtaining contributions for their relief. We shall be glad to receive and forward any moneys sent to us for this purpose; or they may be sent direct to Dr. R. L. Maddox, Green Bank, Park road, Portswood, Southampton, England.

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All communications for the columns of the Bulletin *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Precautions with Magnesium Flash Views—The Photometer and the Time of Exposure—Wet and Dry Color-sensitive Plates--Durable Eosine Silver Plates—Removal of the Reflections on Mirrors, Furniture, Windows, Surface of Water, etc—A Plate Process Without Development—Cold Development for Platinum Pictures.

For nine days we have not seen the sun, rain without end, the days shorter, and orders (for the holidays) increasing. You have no idea of such dreary conditions of light, and I venture to say that New York has as many sunny days in December as we have in July; and it is worse still in St. Petersburg, where daylight lasts about two hours in December. No wonder then if everybody goes for Gädicke and Miethe's magnesium flash powder, so as to have a substitute for daylight.

We may probably see this coming winter that photography with magnesium flash powder will make its appearance at fancy balls to take ladies and gentlemen in fancy costumes. Old people also, who are no longer able to keep a quiet position, have a decided preference for this light.

I have observed that many people fall into mistakes in the application of the magnesium flash light, particularly with regard to the position of the screen of tissue paper. They generally have it too large and place it too close to the lamp, shading the reflector near the sitter. In consequence of this the shady part of the person will remain too dark. The tissue paper is only to prevent the rays from falling direct on the face, and for this a piece one foot square is fully sufficient. The background is also generally too dark. I use a white one; and being double the distance from the lights than the sitter, it is four times as dark, and therefore the correct density. A white overhead screen, being spread about four feet above the person, has a very good effect, it giving more light to the hair. These are small matters, but a good deal depends upon them. The process has a great future.

To determine the correct time of exposure during the present changeable weather is attended with the greatest difficulties. Reproduction photographers complain that it sometimes takes them several hours to expose a single picture these dark days, and to their dismay they often find it under-exposed, with time and dry plate lost. I have tried if it is possible to utilize my photometer for the determination of the time of exposure. For several months I exposed it three times a day, at 9 A.M., 12 noon, and 3 P.M., eight minutes in winter and five in summer, and made a note of the photometer degree so obtained. The time of exposure necessary for landscapes, reproductions and portraits was also noted. In this way I am compiling a table which will enable one in each case, no matter how the weather may be, to determine in advance the necessary time of exposure. I have already derived many advantages from this, and hope that its practical use will be recognized as soon as my table is finished, which will be very shortly.

In our amateur circles the color-sensitive plates daily excite more attention since tourists have returned from Switzerland, the Tyrol, etc., bringing with them comparative views on color-sensitive and ordinary plates. The difference is remarkable in pictures of glaciers with cloud effects, a green foreground, etc. Very few practical photographers have as yet taken any notice of this. I would like to assert that the amateur photographer knows more about color-sensitive plates than the professional.

Mr. Mairz, a well-known amateur, has made some interesting observations about this lately. He writes:

"During my experiments with bathing plates in erythrosin silver solution relative to the production of color-sensitive plates, I obtained only three good ones from a dozen. All the others fogged in the developer. This fog may have arisen from the coating of the drying box having the smell of turpentine. This failure gave me the idea not to dry the plates at all, but to bathe them immediately before use and expose them wet. The first attempt resulted magnificiently, and since then I have dried no more, and had no failures. There is no harm to leave the bathed plates (dried at the edges with blotting paper) wet in the plate holder before and after exposure. In taking views of a cemetery, it was almost an hour's ride, with the wet plates in the holder, and after returning home I delayed about three hours before developing, the negatives developed excellently with the soda developer. In all cases I used Gädicke plates, adding no ammonia, contrary to formula, because its presence in the old bath could be distinctly recognized, and it seemed to me that much ammonia was not advantageous to the Gädicke plates.

"I have not found that the sensitiveness of the bathed plates differs much from that of the unbathed ones, and believe that I can recommend leaving off the drying in all cases where one is in a position to expose and develop soon after bathing."

Much complaint is made that the bathed plates are of only very little durability, and indeed the time varies considerably, from eight days to six weeks. It is a fact that decomposition commences on the outer edges of the plate, and that it spreads gradually towards the middle. My son and myself have now succeeded in producing eosine and silver plates without bathing, by coloring the emulsion. These plates have kept well since last summer, over four months. They require no yellow glass for landscapes, are just as sensitive as an ordinary plate, and are already manufactured in large quantities by O. Perutz, of Munich.

A frequent question relative to interior views is the following: "How can the disagreeable reflections of furniture, mirrors, waxed floors, walls and doors be removed?" This should be avoided by removing the reflected light itself; but by doing so it will interfere with the illumination. This question has lately been practically solved by Professor Jacobsthal, who at the club meeting showed a number of double pictures of the same objects: Architecture, with glossy walls, exhibition pieces behind glass, and glossy oil paintings, in which the reflections upon one of the pictures could be observed in the most conspicuous manner, while upon the other they had almost entirely disappeared. The difference was surprising. Mr. Jacobsthal arrives at the results in the most surprising manner by a polarizer (Nicol or tourmaline) which is arranged in front of the object. The small size of these instruments is of course an obstacle to the production of large plates, but by a clever adaptation of a suitable arrangement in the diaphragm opening this will doubtless be overcome. The pictures create a general interest. The reason for this appearance is that the glossy light polarizes oftentimes, or is swallowed up by the polarizing body if this is in a certain position. Of particular interest is the fact that by such Nicol or tourmaline the blue sky is considerably reduced, but not the white of the clouds, in consequence of which the effect is the same as with color-sensitive (that is little blue sensitive) plates. Only one kind of gloss cannot be thus removed, that of metal surfaces.

The platinum print has also its friends in America, and to these the process of procuring platinum pictures by direct printing and without development will be welcome. Captain Pizzighelli thus writes about it.

" A sensitizing solution is made as follows:

" *The Iron Solution.*—To the normal iron solution is added in the dark, with shaking, as much neutral ammonium or sodium oxalate as will dissolve at ordinary temperature. Of the salts mentioned there will be necessary for each 100 ounces of the solution

Neutral ammonium oxalate	18 to 20 grams
or " sodium oxalate	15 to 18 "

The original brownish-gray color of the ferric oxalate changes, in consequence of the formation of the corresponding double salt, into a handsome emerald color. The saturation of the solution can be recognized by a slight discoloration of the same. The addition is stopped as soon as this is observed, the bottle is shaken for a little while, and the solution is then decanted and filtered.

"One of the two iron solutions made according to foregoing formula is mixed with the normal platinum solution, 1 to 6, in the same proportions as mentioned by Hubl for the old platinum process, viz.:

Platinum solution (1 to 6)	24 cm.
Ammonium or sodium iron solution	22 "
Gum arabic solution	23 "

The best paper to be selected is plain photographic paper, smooth or rough, as furnished from the factories of Rives and Steinbach, of Malmedy. My tests were made upon paper from the latter factory.

"As the best thickening materials for the sensitizing liquid, I have found solutions of either gum arabic or arrowroot. The former gave better results. The proportions are:

Gumar abic	50 grams.
Distilled water	100 cm.
Arrowroot	2 grams
Distilled water	100 cm.

the latter cooked to a paste. Mix before use as follows:

Sensitizing solution	2 parts.
Gum arabic solution	1 part.
Sensitizing solution	1 "
Arrowroot paste	1 "

The mixture is well stirred, eventually in a mortar, until it forms quite an homogenous liquid, and it is then filtered through thin muslin.

"The coating, drying and preserving the paper in the calcium chloride case is analogous to the old platinum process. If harder pictures are desired, chlorate of potassium is added to the sensitizing solution.

"The following is the manner of operating.

" *First.*—The printing is continued until all the details have appeared; then finish (as in the old process) by immersing in muriatic acid (1 to 50) and washing.

"*Second.*—The printing is done only so far that the picture as a whole is visible, but without possessing the fine middle tones. The picture is taken from the printing frame and simply put aside. After from one-half to several hours it will complete itself, as the reduction of the platinum continues in the dark. Or the picture is completely developed by treating the same with a cold solution of carbonate of soda.

Saturated solution of sodium carbonate	5 cm.
Distilled water	100 "

The picture is immersed in this solution and left in the same (some seconds) until all the fine details have appeared.

"*Third.*—Print about as long as in the ordinary platinum process and develop with hot oxalate.

"The process is somewhat more manifold than the old one."

YE FAIRY CAMERA.

A Story of Christmas Magic.

BY ADELAIDE SKEEL.

I.

"Why don't you take a shot here so as to see how the thing works?" suggests the amiable salesman.

There is certainly a friendly freemasonry in photography, and the man who sells you a camera makes your interests his own to a far greater degree than one who sells you a yacht or a horse.

"Do take a shot," he urges; "you bought the machine to use, didn't you?"

"Yes; but not to use myself. I bought it to give to a la—la—fr—friend. It wouldn't be quite square to open the box of plates, would it?"

The purchaser, a fair-haired, fresh-looking young fellow, blushes furiously as he makes this confession, while his desire to experiment with the new toy conquers his nicer sense of giving a present intact.

"Quite the correct thing," answers the salesman briskly. "Take some views, and let her—him, I mean—develop them for you."

The two men stand in the large show rooms of a well-known photographic merchant, where cameras, tripods, and carrying cases are crowded together in bewildering confusion, the delicious newness of varnished wood rising like incense over all. On the side walls are long shelves covered with packages of dry plates, bottles of developer, glass measures, porcelain trays, rubber finger-tips, and red lanterns; everything indeed to charm the sixpences from the enthusiastic amateur's pocket.

Ernest Gessler having parted with many sixpences, has received in exchange the Fairy Camera, a dainty little box just suited for Somebody's Christmas stocking. I do not know whether photography, like flowers, has a language of love, yet certain it is the giver in this instance means to give himself with the gift, should the magical box be favorably received by his Dulcinea. Surely it will be a pleasant pastime by daylight and dark to teach her to sketch with a sunbeam. Meanwhile, why not experiment himself?

He looks about the orderly store; at the long bare counters, behind which obliging clerks stand bowing to eager buyers; down the steep stairs, up which breathless ladies toil, panting, in broken sentences: "Why doesn't Macy keep these things; it takes half a day to buy an ounce of developer; why isn't there an elevator?" out on busy Broadway, then back to the smiling salesman.

"What shall I take?" he says in despair. Now the great firm don't usually sell or give away ideas, but this time the clerk says:

"Oh, ah; anything you like. A shot up or down Broadway say; and pray excuse me. If you wish to develop your plates I will send a boy presently to show you our dark room. We've a new wrinkle in the pyro and potash solutions not yet put on the market; would be glad to have you try it. Good day, sir, and good luck to you."

Ernest Gessler, left alone, walks to the window, but sees nothing takable in the stream of people passing beneath. Indeed the reflected light from the tops of the many shiny silk hats might well cause him to fear halation and discourage his attempting a picture of these crowned heads.

With a disappointed sigh he returns to his down town office, and then with his new camera on his desk before him continues his search for the picturesque, when, lo! the view is at his elbow: "Poverty Flats" as seen from his own back window. Some author has looked at England from a back window, why shall not a photographer thus look at America? Down town the contrast between great business houses and tenement blocks is close and vivid. Capital throws a backward glance at labor, but scarce has time to consider the seamy side of life so near by.

Gessler is neither a philanthropist nor a Henry George man, yet he starts back in horror at the scene before him. There is a monotony in the rear view of squalid tenement houses. Iron balconies with loose rails; broken sashes; old tomato cans; flapping clothes lines; and ragged children, being the chief feature always.

"This is Poverty Flat with a vengeance," he says, "doubtless the hot-bed of paupers; the sink where all the money of charitable bureaus disappears."

However, since photography is the question of the moment, he concentrates his mind on the view *per se*, focusing on a small child who comes bare-headed on a balcony to water a dead evergreen tree growing (?) in a cracked flower-pot. Like other dwellers in the row she is ragged and dirty. Her boots are bad ones and her stockings wrinkled, but her pose so pathetic that she gives the picture its needed *motif*.

"Snap," and it is done. The clicking noise makes the little girl start, look across the fifty feet which separate her from the artist; wonder what has happened; and then run through the sashless window into the kitchen, where her remarks to a crowd of brothers and sisters would amuse Ernest Gessler could he hear them.

"Say! I was watering our Christmas tree to keep it alive for Santa Claus, when a gentleman from a back window of that high building full of lawyers' offices on Park row fired a gun or something at me and I was so scared I ran in!"

"Did he hit you?"

"Was it a bullet?"

"Oh, show it to us!"

"He didn't kill you, sister. Are you bleeding?"

"Did he hit our tree?"

"Didn't you call the p'lice?

"No—no—I'm all right, and the tree is safe. We'll bring it in on Christmas Day and play it is full of presents."

"Won't it be really, sister?"

"I thought you said you would put the things you get at Sunday-school on it for us?"

"I can't go to Sunday-school any more now my shoes are broken out at the sides, so I shan't get any presents."

"Oh, sister, p'raps you heard Santa Claus shooting up in the sky; maybe he'll put presents on the tree."

"Let us hope so, darling."

II.

Coralie Richards has a bad conscience, for the times are out of joint. It is Christmas time; caroling time; yule-log time; at the merry table think of those who've none time. And yet she is not busy knitting mittens for frozen fingers; cooking dinners for empty stomachs; dressing dolls for the dolless; nor even sorting over last year's cards to decide which of the least pin-pricked ones should be sent to the missionaries, but simply photographing.

There are no monkish legends about pyro and potash; no mediæval associations about acids and alkalies. If you send a friend a photographic Christmas greeting he wonders how many other fellows have received prints from the same negative. In short, there is no sentiment about the art.

Coralie faces the situation and acknowledges she has forgotten Christmas in her Christmas gift. Fortunately for the giver he is remembered, and his aid constantly needed.

"It is all your fault, you bad boy," she says to him one evening as they stand together by the table of her improvised developing room, "that I neglect every duty for this taking thing. I never in my life made so few presents, and I don't make any calls at all."

"I should think society would excuse her votaries from visiting at this busy season," answers Ernest, gazing with rapture at his fair inamorata as she buttons an oil-cloth apron about her pretty figure and displays her white, dimpled wrists by rolling up her sleeves.

"Oh, of course rich people don't call, but it's poor people, don't you know. The mission class and Sunday-school children, they must think I have forgotten them. I usually look up the sick and the most ragged ones don't you know."

Ernest does not know and does not greatly care, but he says, as sympathetically as possible, for he does care if she cares:

"Yes, too bad; very rough on them. There, take care, let me drop in the restrainer; you can't develop with an ounce of bromide to a dram of pyro."

"I have lost my list, too, and the address of one whole family," she continues.

"Look in the Directory."

"Oh, you foolish man, mission children don't have their street and number and places of business and house uptown in the Directory as a rule."

"No? Well, I'm sorry; wish I could help you; would like to be of service to you. Ah! this plate is coming up very clearly; why, it's the one I took before I gave it to you. I forgot to develop it the first time we were down here, and since you have taken so many we have had no time."

"It is a blessing you did not use it again and get a composite view of tenement house balcony and interior of Fifth avenue brownstone."

"I'm glad it's nice. Do I bother by talking?"

"I am so worried about that scholar who doesn't come any more to the school. I would give anything to find her."

"Anything?" In the red light the meaning of Ernest Gessler's glance is all lost, but his tone tells the story.

"I would hunt through the worst slums of the city for you; I would take a detective camera and photograph every black-pin girl on Broadway; I would seek the wide world o'er to win——"

"Why, there she is!"

Both amateurs start back at the magical appearance before them.

"There she is, if that is she?" says the young man; for sure enough on the plate, rapidly fogging in the developer, is the child on the balcony watering her dead evergreen tree.

"Yes, it is Mary Jane, the dear little thing. She told me she had a tree she dug up in the woods last summer on our mission picnic, and that the children called it their Christmas tree. Her hair is all flying and she has grown so thin. Oh, Ernest! Mr. Gessler, pardon me—where did you see her; tell me quick. Was she hungry? Is she sick? Why doesn't she come to Sunday-school? Oh, this blessed photography; to think it has helped me find her! She shall have presents for her tree and—and——"

"What shall I have?"

"Tell me first where she lives; how did you know her?"

"I didn't know her; she stood where you see her now, by her own back door. I shot at her from my office window. That's the whole story. I give her to you as a Christmas present and I must be paid in——"

"A dozen mounted silvers of her, printed, toned, fixed and trimmed by my own red right hand."

"Nonsense! It's your hand I want, not your handiwork."

"But look. She's gone!"

True enough during this billing and cooing little Mary Jane sinks back into the plate and she is again lost. Alas! love-making does not retard the action of acids on gelatine films, and ten extra minutes in a developing bath will blacken the clearest negative. Nevertheless it happens by and by that Mary Jane's tree is covered with presents and Ernest Gessler wins his heart's desire, because, forsooth, the view was taken with a Fairy Camera.

[*From Deutsche Photographen Zeitung.*]

THEORY AND PRACTICE IN TAKING VIEWS ON COLOR-SENSITIVE (OR CORRECT COLOR-TONE) PLATES. ORTHO- OR ISOCHROMATIC VIEWS.

By L. Belitzki, *Nordhausen.*

Although photography has the reputation of copying nature, this can be said only with regard to correct delineation through application of proper apparatus and judicious manipulation. The worst defects of photography consist in the wrong reproduction of the color tones. Not only photographers, but every person of some education well know that yellow takes dark and blue light; that freckles and red hair will appear too dark and blue eyes too light on the picture. If we take certain colors like chrome yellow and ultramarine, they will have a reversed effect to the eye on a photographic picture, the light chrome yellow appearing almost black and the darker ultramarine being very light on the same picture.

This well known fact created the idea of the chemically active and chemically ineffective rays. This designation has application principally only for chemicals generally used in photography, and even then it is not entirely correct, as by a prolonged influence even the less serviceable rays (green, red, and yellow) will exercise a chemical action. With other matters the reverse is oftentimes the case, as already demonstrated by Herschel in 1842, that violet, for instance, bleaches quickest in yellow light, and that the rays complementary to vegetable colors exercise in general the greatest chemical action upon the same.

The reason why the strongly refractive rays act particularly upon the silver salts and the other light-sensitive chemicals used in photography, lays in the absorptive power of these compounds for the said rays. Draper was the first to draw attention to this in 1850, and Schultz-Sellack followed later. Professor Vogel went further, and explained (in 1873) that by reason of a number of experiments made by him about the action of the solar spectrum upon different coloring matters, it would be possible to make bromide of silver light-sensitive to any color, or to increase the already existing sensitiveness by adding a compound accelerating its chemical decomposition, *i.e.*, absorbing the colored rays in question. The following description will explain this somewhat clearer.

If sunlight is allowed to pass into a dark room through a small slit and then through a condensing lens, so that a sharp picture of the slit will appear upon a white screen placed opposite, the picture of the slit will advance sideways, enlarge considerably, and divide into the well-known rainbow colors, if between the condensing lens and screen a glass prism is placed in the passage of the rays, the edges of the same being parallel with the slit. This colored picture is called the solar spectrum.

A regular spectrum apparatus avoids the necessity for a dark room. It consists of a metallic tube carrying the fine adjustable slit and a condensing lens; one or several strongly light-refractive glass prisms; and a telescope to view the spectrum. To photograph the latter the telescope is replaced by a photographic camera with aplanatic double lens. If solutions of certain coloring matters in a glass bath or vessel with parallel sides are placed between the slit and the prism, so that the light has to pass the color solution before it is refracted and divided by the latter, dark stripes or bands will originate in the spectrum at certain places. The colored bands are therefore, so to speak, extinguished by the colored rays having been absorbed by the color solution in front of the prism. These are called the black stripes or absorption bands, and a spectrum with such bands is an absorption spectrum.

Professor Vogel tested aniline reds for instance and found that a solution of the same, brought before the prism, would absorb the yellow and yellow-green light by extinguishing these colors in the spectrum, producing in their place black bands. He then colored bromide collodion with the same coloring matter, and produced dry plates from this collodion. Exposed in the spectrum these plates likewise absorbed the yellow and yellow-green rays, and the bromide of silver was almost as much changed chemically as is the violet. A test with a green aniline color, which absorbs the red rays, gave the result hoped for. Plates colored with this substance showed sensitiveness up to the red in the spectrum.

Although many more tests were in contemplation, Professor Vogel, by reason of these results could clearly give the above explanation. The theory of the color-sensitive processes was therefore already determined fourteen years ago.

The first color-sensitive process was made public by Professor Vogel in 1884. It was a wet process with eosine-colored collodion. This was particularly applicable for the reproduction of oil paintings and other colored objects, but it required two silver baths and great care and knowledge; but it gave much better results than the dry collodion and the gelatine dry plates with the same coloring matter, the action of the eosine silver coming here for the first time to practical recognition.

To those who desire to enter into the details of this process, I recommend Professor Vogel's book, "The Photography of Colored Objects in their Correct Tone Proportions."

Our occupation to-day is only with color-sensitive plates, as those who have given up the wet or collodion process years ago undoubtedly do not feel inclined to commence it again, partiularly as the wet color-sensitive process is much more circumstantial and difficult than the ordinary one. Very few would also like to choose bromide of silver collodion plates for their experiments.

As most photographers do not make their own plates, it is hardly necessary to speak about the coloring of the emulsion before flowing them. Plates colored in the emulsion have been in the market for some time, and those who have constant orders for copies of colored pictures will do well to purchase them. Still it is of advantage to every one to become acquainted with the production of color-sensitive bath plates, particularly as they are considerably more sensitive than those colored in the emulsion.

Many are of the opinion that plates colored in the emulsion are much cleaner than color-bath plates, but I can give the assertion that with a little care absolutely clean plates can be produced. The pigments used in this process are mostly tar colors; that is, such as are produced from coal tar by various chemical processes. To this class belong the anilines, which are mostly used for our purpose; but not all tar colors—as, for instance, eosine—are aniline colors. There is hardly one of these numerous coloring matters which has not served already, some time or other, for orthochromatic experiments. And particular merit for their researches in this direction is due Professor Vogel; Professor Eder, of Vienna; Victor Schumann, of Leipsic; Dr. Albert Ira, of Munich; Obernetter and Scolik.

Particularly suitable for practical use, so far as experiments have demonstrated, are the eosine colors, to which class erythrosin and azalin belong.

The eosine coloring matters make the gelatino-bromide of silver plates sensitive to the yellow, yellow-green, and green rays, and have besides the highly estimable property of dissolving in water and the capability of combining chemically with silver, which is of particular value, the eosine silver making the plates very light-sensitive and doing away in many cases with the application of the yellow glass. Unfortunately the eosine will not sensitize for orange and red rays. Therefore if objects are to be photographed with much red, we are obliged to have recourse to Professor Vogel's azalin, produced by a mixture of chinolin red and chinolin blue (cyanin). While eosine is presented as a brown-red powder, the azalin (in solution a beautiful carmine-red) looks green in a dry state with a metallic crystalline gloss. It is hardly soluble in water, but dissolves much easier in alcohol. It is not so constant to light as eosine, the cyanin contained belonging to the most inconstant colors we know of. But it makes sensitive for red as no other coloring does.

For use the azalin has to be dissolved in alcohol and is then diluted with water, when the inclination of the coloring matters to separate again is observable. There is also to be mentioned here chlorophyl, the natural coloring matter of green leaves, which makes strongly red-sensitive and is recommended by Ives, of Philadelphia.

All diluted coloring matter solutions intended for bath plates have to be made with distilled water; treated very cleanly; preserved in the dark in bottles with glass stoppers, and should be filtered carefully before use.

The highly sensitive plates are less suitable for bath plates than those of ordinary sensitiveness. The inclination of very sensitive plates to fog, and to decompose during preservation, is greatly increased by the color bath. The sensitizing action for colors appears also more distinctly with plates with little or no iodide of silver than with those containing much (3 to 5 per cent.).

The intensity of coloration of the plates is of great importance. It is generally accepted, as a rule, to take the color solution as weak as possible, that is, to apply no more color to the plate than necessary for the absorption of the little refractive rays; because, by taking the solution too strong the opposite of the desired effect will be obtained. The rays are restrained to act sufficiently upon the bromide of silver underneath, and the result is greater insensibility and hard pictures, in which the deep shadows remain without any details, and the red to green colors have oftentimes acted less than with ordinary plates.

A definite strength for the color solution cannot be given for all plates, those with soft or much gelatine absorbing more liquid and color matter than those with hard and less gelatine. The formula must suit each brand of plates.

Several things have to be strictly observed in bathing the plates to guard against non-success. The diluted and very clearly filtered color solution is put into a clean, chemically pure glass or porcelain dish; the plate to be prepared, with the film on top, is placed into the same. All this to be done under ruby light, and the time is to be observed.

The bathing time has to be calculated by seconds if uniform results are to be obtained. The plate has to be dusted on both sides before it is placed in the bath. It is best to remove emulsion marks on the back of the plate before bathing, because they are apt to easily peel off in the bath and spoil other plates by adhering to them. After the prescribed or approved time it is lifted quickly with the aid of a small silver hook, left to drain a few seconds, and placed against a support, resting on one corner upon clean blotting paper, remaining so for one or two minutes. During this time a new plate can be put into the bath.

After the plate has thoroughly drained off, it is placed, with the same corner downward, upon a drying rack. If the plate is reversed, the color solution will run back and produce wavy or flaky figures or stripes in the negative. Every particle of dust that remained on the plate or fell upon it while wet will give a non-transparent spot in the negative.

After bathing about six plates a small quantity of ammonia should be added to the bath and then it should be filtered. This of course depends upon the general condition and purity of the bath, and the number can be changed according to necessity. (*To be continued.*)

THE LATENT OR DEVELOPABLE IMAGE.

BY CHAPMAN JONES.

(Continued.)

CAREY LEA then continues by describing the exceedingly interesting discovery that sodium hypophosphite can be caused to bring about a condition of affairs in the haloid silver salts that is so exactly similar to that condition caused by light when it gives the latent (I prefer to say developable) image, that he fails to find a difference between the two effects, except in a perhaps unimportant point, which we will pass over.

He then argues that the developable image consists of photosalts, and it is this idea that I wish to suggest is so far from being proved, that he who interprets these results as showing that the developable image does not consist of photosalts, takes up a position from which he cannot be driven.

The first, simplest, and most obvious test for these photosalts is their appearance, for an amount which Carey Lea, as a practiced investigator, cannot detect analytically is conspicuous by its color. The color is therefore a more delicate test than the balance, yet the developable image, which consists of these photosalts, is absolutely invisible. This discrepancy he excuses by saying that "it would seem that the particles affected, although numerous enough to serve as a basis of development, are still too few and too scattered to be visible or affect the color." It is clear to the feeblest scientific intellect that though this may be so, the statement simply begs the question. Thus the only method that has so far been made known of testing for photosalts, when applied in this case, argues that the developable image is not composed of photosalts.

Carey Lea seems to consider that the production of a developable capacity by means of sodium hypophosphite is an argument in favor of the presence of photosalts in the developable image. It is difficult to see that this affects the question in any way whatever. The hypophosphite is a reducing agent, and so is light; but if fifty reducing agents would individually bring about the developable condition in haloid salts of silver, that would be no proof or argument that the developable condition was due to reduction when the most delicate methods of detecting that reduction failed to show it. To state otherwise is again simply to beg the question.

But this matter does not rest merely upon these negations. There are positive reasons why we should consider that the developable image does not in any sense consist of these phototalts. The photosalts are products of reduction; they contain less of the halogen than the unchanged salt. The production of the photosalts depends therefore upon the removal of halogen from the silver compound. Development is also a process of reduction; and if the action of light in forming a developable image is to form these photosalts, we should be justified in expecting exposure and development to be equivalent—interchangeable, at least, up to the production of a visible image by light. It must be particularly borne in mind that a visible image would be produced by so minute a quantity of photosalt that chemical analysis could not detect it. Now an ordinary gelatine plate becomes undevelopable by the action of an amount of light that would have to be multiplied probably by many hundreds, if not thousands, of times before the very minute amount of photosalt is produced that is necessary to make itself visible.

The reversing action of light is, I consider, the sheet anchor of the investigator of the nature of the developable image. But in supposing that the developable image consists of photosalts, we have not only no explanation, but no theory of this phenomenon. When the feeble light that can find its way through the aperture of a landscape lens acts upon a sensitive plate for a second or so, a developable image is produced. If the light is allowed to act for a few minutes, the dark parts of the subject may be developable, but the lighter parts have by the further action of light lost their capability of development. A further increase of exposure under certain circumstances again confers the possibility of development, but this alternating action of light soon dies out. A very considerable further increase in the amount of light or duration of its action begins to produce a photosalt, as evidenced by its color. To ask one to imagine that the effect of light from first to last is of the same sort, and that it simply increases the amount of the products of its action, is to expect an amount of credulity that is not compatible with a scientific mind.

ORTHOCHROMATIC PHOTOGRAPHY.

BY J. B. B. WELLINGTON.

[A communication to the Photographic Club.]

NOTWITHSTANDING the many statements that have been made with regard to the use of orthochromatic plates for outdoor work, that they were bound to be far superior to the ordinary plate, I think sufficient time has elapsed to have enabled photographers to have fairly tested them for that purpose; and what has been the result the present exhibition will show, with one exception, that orthochromatic plates have not superseded others as yet. And why is this? In many cases they have found but little difference between them and the ordinary plate, and again, many have found that the use of them entails so much greater care in manipulation that they are not worth the extra trouble and cost of using them.

One great advantage of orthochromatic plates (in conjunction with a yellow screen) is photographing outdoor subjects on a slightly foggy day; the result on an ordinary plate being flat and foggy, on the orthochromatic, crisp and brilliant. But for landscapes with distance, if used with a yellow screen (especially on a clear day), the charm of distance is gone by losing what we call atmosphere and bringing it sharp and clear; and again, shadows, which are usually of a bluish-gray nature, are rendered much darker than they appear, so that if used at all for landscape a great amount of judgment and experience are necessary. But I admit in some cases it is an advantage to render distance clearer, especially on those occasions when there is too much atmosphere. I think I may fairly state that this is the most difficult branch of anything connected with photography. But when we come to photographing flowers or other close studies in color, as well as copying paintings, then, to get the best results, their use is absolutely necessary.

We are now approaching the season when, if orthochromatic plates are to prove of any use at all for landscape work, their value will become apparent. I refer to the beautiful tints of yellows, browns, and shades of red which we see on the foliage at this time of the year; one tree with its sere and yellow leaf standing out in bold relief against some darker green tree which has not yet begun to put on its autumnal robe. I know many have been waiting to try the effect of this latest discovery in photography for this purpose, and I have taken this opportunity of bringing before you two new formulas which will enable you to try for yourself whether there is any real value in the process for outdoor work. I think it would prove interesting if members were to bring the results of their trials in this direction before the club; an ordinary plate should be exposed at the same time.

What I specially claim at present is, the use of quinine in conjunction with the dyes, for the purpose of prolonging the keeping qualities of the stained plates, and also treating the dye itself with chloral hydrate. In fact quinine has many other advantages in connection with photography, and no doubt before another year has elapsed we shall have many uses to which it will be put. One little use, or novelty I perhaps should say, I discovered only a few weeks ago, and which will serve as a short paragraph for the coming Almanac.

My formula, although working satisfactory, might with advantage be made less complicated, at least for those who wish to make it up; but I hardly see my way of doing so at present so as to keep all the existing good qualities in it, and I thought it would be a pity to wait till all further experiments were completed, as every one knows that experiments create experiments, and so we may go on almost forever.

The two dyes which I propose to bring before you are cyanin, which is well known, and methyl violet. Cyanin has, in my opinion, a greater range of color-sensitiveness than almost any other dye, and is most useful in copying paintings, where, as a rule, a large amount of red is to be found. This dye is particularly sensitive to red and sufficiently so to green (I am referring to copying, and not to the spectrum), which is not the case with erythrosin, which barely extends beyond the yellow and is quite insensitive to red. Moreover cyanin has no action on the gelatine like some other dyes, but develops clear and brilliant as any ordinary plate.

Between cyanin and methyl violet there appears to be but little difference in color-sensitiveness. The cyanin is a trifle the more sensitive to red. On the whole, perhaps methyl violet is preferable to use, not only on account of its price (which is one-fortieth that of cyanin), but it appears to me that when it has commenced to develop, the sensitiveness to yellow is somewhat destroyed, and more yellow light can be used in developing than is the case with cyanin. But great care must be taken when dipping the plates, placing them in the dark slides, and again into the developing dish, which should be done in almost total darkness. This applies more forcibly when using cyanin.

Now to come to the formula of cyanin. I find by treating it with chloral hydrate and again separating by means of ammonia it is much improved, and does not precipitate when added to an aqueous solution, which untreated cyanin does, as many no doubt know who have tried it. Take

Chloral hydrate	1 ounce.
Cyanin	10 grains.
Water	4 ounces.

Boil together in a water-bath, when the cyanin will be found to be dissolved. Keep stewing for twenty minutes, then add one ounce of liquid ammonia carefully; ebullition takes place, and chloroform is liberated, therefore it is advisable to do this in the open air. After a few minutes the cyanin will be found adhering to the sides of the vessel; the supernatant liquor being carefully decanted away, the residue is rinsed once or twice with water. Eight ounces of methylated spirit is now added to dissolve the cyanin, together with 120 grains of soluble sulphate of quinine. Dissolve the latter by heat in a small portion of the spirit first. Finally, filter through a small filter paper. The solution will keep as long as a dipped plate, about four to six weeks.

For dipping take of the above

Cyanin solution	1 dram.
Liquid ammonia	1 "
Water, distilled	20 ounces.

A weaker or stronger solution may be used to suit various plates; the weaker it is the longer the plates will keep As a rule a plate of medium rapidity will be found easier to work than one of extreme rapidity. The cyanin is added to the water, the measure washed out, the dram of ammonia next measured out and added to the cyanin and water, with stirring. If the ammonia is poured into the same measure which contained the cyanin, a precipitate of quinine takes place, which does not happen if in a diluted form, thus the reason of adding the cyanin to the twenty ounces of water first, and finally the ammonia.

For a half plate take two ounces of the above diluted solution and flow over the plate, and keep rocking for two minutes, after which throw the solution away. On no account must the same be used for color-sensitiveness of another plate, as great irregularity will result in the rapidity and color-sensitiveness of the next plate. This applies to all dipping operations. The plate now dipped is to be dried in total darkness.

For methyl violet the treatment required is somewhat different. The dye used by itself produces fog, which baffled me for some time to get rid of, but finally I succeeded by treating it with an oxidizer, such as bichromate of potash, and then proceeding as with cyanin—by treating it with chloral hydrate. But this latter treatment is not absolutely necessary; in fact there is so little difference worth speaking of that you may as well disregard this latter treatment. Take

Methyl violet	10 grains.
Water	4 ounces.
Bichromate of potash	½ ounce.
Water	2 ounces.

Raise both as near boiling as possible, and mix. Keep in the water for half an hour, collect the precipitate by filtration, and wash by passing water through the filter. By this treatment it is no longer soluble in water, as was the original. Dissolve the filtrate in methylated spirit containing 120 grains of the soluble quinine sulphate and filter.

For bath take

Methyl violet solution	1 dram.
Ammonia	1 "
Water, distilled	20 ounces.

To get any decided effect at all on orthochromatic plates a yellow screen is necessary, but many people imagine they will show correct rendering of color without any screen at all. I have not yet seen the gelatine plate that will do so. Almost any yellow dye will answer, some better than others. I have a liking for turmeric, which I prepare as follows:

Turmeric	1 ounce.
Methylated spirit	7 ounces.

Digest on a water-bath for twenty minutes, and allow to stand a day or two to settle, then decant the clear solution off (about four ounces) and add to it four ounces of methylated ether and fifty grains of pyroxyline. This will make the stained collodion. Coat a piece of patent plate 3¼ x 3¼ (ordinary glass should not be used, owing to its want of flatness, with which it is difficult to get a sharp image); take another similar piece of glass and cement the two together by means of Canada balsam, the glass being slightly warm. I have to thank Mr. Debenham for the suggestion. It not only reduces the reflecting surfaces, but it also renders the film more transparent as well as protecting it from injury. Clean away the balsam that oozes out, and mount as an ordinary lantern slide. This should be kept in the dark when not in use, as turmeric is bleached by the action of light. I prefer to use it behind the lens, as then it is protected from the light, and the folds of the bellows will prevent it from falling down. With this screen the exposure will be increased about ten times.

Any of the usual modes of development will suit, but I must again caution you to expose the plate as little as possible to the light of the developing room. With these precautions I can insure success to any who may try it.

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[*From American Journal of Science.*]

IMAGE TRANSFERENCE.

BY M. CAREY LEA.

By the term image transference I propose to denote certain effects produced on sensitive films, effects curious in themselves, and of interest in connection with the subjects of papers which I have written on the photosalts of silver, etc.

In those investigations it was shown to be possible to take a film of silver haloid—chloride, bromide, or iodide—and after making marks upon it with sodium hypophosphite, to obtain a development of these marks, precisely as if they had been impressed by light, but quite independently of any exposure to light. I now propose to show that it is possible to develop on a film of silver haloid a complete image (a print from a negative, for example) without either exposing the silver haloid to light or to the action of hypophosphite, or subjecting it to any treatment whatever between the moment of its formation and that of its development. The film of silver haloid comes into existence with the image already impressed upon it.

For this purpose almost any silver salt is selected. Citrate, benzoate, tartrate, pyrophosphate, etc., answer perfectly. (Some silver salts, the phosphate especially, undergo a slight reduction spontaneously in the dark; these are less suitable.) A film of the silver salt selected is formed on paper by the ordinary methods, and this is exposed under the negative to a few seconds of sunshine.

The next step is to convert this film into one of silver chloride or bromide by plunging it for a few minutes into dilute acid. Ordinary hydrochloric acid may be diluted with six times commercial hydrobromic, with two or three times its bulk of water; the exact strength is unimportant. After a short immersion the acid is to be washed out, and it only remains to put the film, now consisting of silver haloid, into a ferro-oxalate developer, when the image appears at once. The chloride or bromide of silver into which the salts above mentioned are rapidly converted by the halogen acid comes into existence with the image already impressed on it at the instant of its formation. So that although the substance which received the image is completely broken up and destroyed, the image is not, but is transferred in all its details to the new film of silver haloid.

It is therefore evident that the action of light on all silver salts that can thus transfer an image must be similar in all its essentials to the action of light on the silver haloids. An important conclusion follows: that all such silver salts must be capable of forming subsalts, else the image could not be transferred. In the case of most silver salts the existence of such subsalts has not been recognized, or even suspected; indeed, if I am not mistaken, the existence of such a subsalt of silver phosphate has been expressly denied; but the image formed by light on silver phosphate can be transferred, therefore subphosphate must exist. These results have also a very direct bearing on the subject of one of my papers recently published. I there endeavored to show that the photosalts of silver as obtained by pure chemical means are identical with the products of the action of light on the silver haloids, both with the material of the latent image and with the visible product of the continued action of light, or rather with the most characteristic constituent of that product. As respects this latter identity, I showed that although the brightly colored photochloride could not be obtained by the direct action of light on silver chloride, it could readily be formed indirectly by acting with light on other salts of silver, and treating the product with hydrochloric acid.

It might be argued that in this proof one link was wanting, viz., proof that the photochloride obtained by the action of hydrochloric acid on silver salts, other than chloride, exposed to light, was of the same nature as that obtained by the action of light directly on silver chloride. The results above described supply that link, if it was needed, and show that the photochloride obtained by the action of hydrochloric acid on silver salts, other than the chloride, exposed to light, has the same capacity for development as has the material for the latent image obtained on ordinary silver chloride.

But this proof itself may be thought liable to an objection. It may be said that as an image was certainly impressed upon the original film, it is not completely proved that the halogen acid had anything to do with the ultimate production of a developed image. The objection would not be well taken, and the experiment may be varied to two ways, either of which eliminates it.

Most silver salts are soluble in nitric acid. After applying the halogen acid it may be washed off, and the paper may be placed in nitric acid until every trace of the original salt (supposing that any escaped the action of the HCl or HBr) is removed, and until it is absolutely certain that nothing is left in the film but the silver haloid. When this is done, the development, so far from being impeded, is rendered only the stronger and brighter. Certainly therefore the silver haloid is the essential base of the development.

Another very decisive experiment may be made in this way. Paper prepared with tartrate, oxalate, or almost any other salt of silver, is to be exposed for a minute or thereabouts to a strong light (not under a negative). It is then taken into a dark room, and marks are made upon it either with a glass rod or a camel's hair pencil dipped in dilute hydrochloric or hydrobromic acid. After letting the acid act for five or ten minutes, it is to be washed off, the paper plunged into nitric acid, and after again washing it can be placed in a developing solution, when the marks made will appear black on a white ground. This mode of operating gives a very convincing result. The nitric acid treatment may be omitted, but when this is done the number of salts that can be used is more limited. The four salts first above mentioned give good results, even without the nitric treatment, but some silver salts undergo a spontaneous change in the dark by keeping a short time, so that when they are placed in a developing solution (without exposure to light) they may blacken instantly all over. Silver tartrate is one of the best salts to operate with, though pyrophosphate, citrate, oxalate, and some others do almost equally well. Sulphate, antimoniotartrate, phosphate, nitrite, and arsenite do not give good results, except with the nitric acid treatment.

With a salt like tartrate or oxalate the experiment is very striking. The paper imbued with it is exposed to light over its whole surface. It is then taken to the dark room, and simply marked with dilute HCl or HBr, and washed. Thrown into a developer, all the marks of the halogen acid quickly blackens, proving, first, that the effect of light is transferred from the one salt to the other; and second, that the effect, as transferred to the chloride or bromide, is far more susceptible of development than it was in the original salt. It seems a not unreasonable explanation of this last-mentioned fact that the greater sensitiveness of the haloid compounds may depend on their power to combine with their own subsalts, so that the reduction may commence with the subsalt, and quickly extend from it to the portion of normal salt with which it is combined; that, on the other hand, other silver salts may not share their power of uniting with their subsalts, and are consequently more slowly and imperfectly attacked by the developing solution. This explanation may or may not be correct, but seems not improbable.

A curious fact incidentally presented itself in the course of this investigation: that when paper prepared with silver salts, other than the haloids, was exposed to light, and then marked with HCl, the effect of a short exposure, so far as development was concerned, was as great as that of a long one. A piece of paper was prepared with a given salt by non-actinic light. It was then placed between the leaves of a closed book, with one end projecting. The book was then placed in the light (very faint sunshine), and the prepared paper was gradually drawn out so that different portions received progressive exposures from 400 seconds down to three seconds. A number of marks were made with diluted HCl, parallel to the end of the paper, so that to each mark corresponded a different exposure from three seconds to 400 seconds. The papers were then placed in nitric acid, washed, and developed. These pieces are before me as I write, and it is impossible to say by the appearances which portion received the three seconds, which the 400. The marks are equal in strength on each paper from one end to the other. The salts used were silver benzoate, tungstate, phosphate, pyrophosphate, and tartrate. The short exposure gave a sufficient basis for development; the longer effected nothing more.

The object of these series of papers has been to offer a new explanation of the nature of the latent photographic image, and to show that it consists neither of the normal silver haloid physically modified, nor of a subsalt, but of a combination of normal salt and subsalt; that the subsalt loses in this way its weak resistance to reagents, and acquires stability, thus corresponding to the great stability of the latent image, which, though a reduction product, shows considerable resistance to even so powerful an oxidizer as nitric acid. Further, that this combination of normal salt and subsalt, which constitutes the material of the latent image, can be obtained by chemical means, and wholly without the aid of light; that the forms of the photosalts, as I have ventured to name them, which correspond to the material of the latent image, are either colorless or nearly so, but that other forms, possessing beautiful and often intense coloration, also exist. With the chloride, some of these brightly colored forms show a ready tendency to reproduce color, in some cases with well marked and beautiful tints. So that we have here an approach to the solution of the problem of obtaining images of objects in their natural colors from a quite new direction, and probably with better hopes of an eventual complete success than by any of the older methods.

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[*From the Photographic News.*]

SUB- OR PHOTOCHLORIDE OF SILVER.

BY LYONEL CLARK.

Carey Lea's paper on these salts in your last issue is so replete with interest, that it will no doubt cause many similar researches to be made over here. The following few experiments which I made last autumn on the silver salts may therefore be of interest, if not of use, to some of our experimenters. I was at the time endeavoring to find out whether the black deposit of the image on bromide paper was metallic silver or not. I intended to have read a paper on this subject before the Camera Club, but was compelled through business to be absent from England all the winter, and my experiments were therefore forcibly interrupted. Reading up the salts of silver generally, I of course came across the well-known statement that silver foil when plunged into ferric chloride is first reduced to the subchloride, and then to the chloride. Supposing the developed image on bromide paper to be formed of metallic silver, it followed that on treatment with ferric chloride, subbromide of silver and ferrous chloride should be formed. But I must first define what I mean by subchloride of silver. I understand a salt of silver which, like ordinary chloride, is white in color and dissolvable in hypo; but, unlike ordinary chloride, is reduced to a black or colored state by the application of any ordinary developing agent and is not dissolved by hypo. This is of course the state in which an ordinary dry plate is after exposure and before development.

I took a sheet of Eastman's bromide positive paper and exposed it behind a negative to gaslight, developed, and fixed it; after washing I treated it with a tincture of ferric chloride (the steel drops of the apothecary); being at the time in a country town this was the only form of the iron salt at my command. The black print bleached away entirely, leaving white paper with no trace of an image by gaslight. After washing I tore the print in two, and placed one-half in the hypo. It still remained colorless. Thoroughly washing this half, I placed it and the unfixed half in a weak ferrous oxalate developing solution. The fixed half showed no change whatever, whilst the unfixed half developed up clearly and brilliantly, in all respects exactly as though it was being developed for the first time, nor did it lose anything by a fresh immersion in hypo. I tried the same experiment on an Ilford plate with the same result.

The bleaching by ferric chloride, however, had been carried out in gaslight, and there was a possibility that the silver might have been reduced directly to a chloride, and then transformed by the gaslight into the subchloride. I therefore carried out the experiment again, keeping the plates, as much as possible, entirely dark, and never in any other than ruby light. The results were identical. It was at this stage that my departure to South America interrupted my experiments.

On reading Carey Lea's paper in your last number I hurriedly repeated my former experiments. This time, to avoid all mistake as to subsequent action of light, I did not fix the plate as before, but, immediately after development and washing, bleached the image with ferric chloride. It disappeared completely by ruby light, but on another plate by gaslight a faint, coppery-red image remained. This however disappeared completely in the hypo.

The original bleached plate developed up with ferrous oxalate clear and brilliant as before, exactly as if the plate had just been taken out of the double back. I bleached another developed plate in this way, which again showed a very faint red image, and exposed it unfixed to daylight. The plate was a Mawson & Swan's lantern plate. The image darkened considerably, assuming the foxy-red color of gelatino-chloride prints, the white portion of the film assuming the greeny-lilac color peculiar to dry plates exposed to light. At the same time I put another similar, but undeveloped, plate under a negative in a printing frame. The image on this plate printed out dark blue or lilac, entirely different from the image on the bleached plate, showing that the two images were formed of different salts of silver. I intend, of course, to repeat and continue these experiments, and find out if ferric chloride forms sub- or photochloride of silver.

Carey Lea states that ferric chloride does not reduce metallic silver to chloride. If this is so, then the image on bromide paper is not metallic silver. Personally I am inclined to believe in four stages: (1) The unaltered white chloride before exposure. (2) After exposure, subchloride, also white. (3) On development, an unknown salt, reddish in color, but dissolved by hypo, perhaps Lea's photochloride. Then (4) metallic silver, black and undissolved by hypo. I am inclined to believe in the existence of the unknown colored salt from having often noticed the extraordinary weakening of the image in color which sometimes takes place during fixing, generally in under-exposed negatives; and I think still more generally when no bromide is used in the developer. I distinctly noticed one bromide enlargement which, being under-exposed, I fixed up without bromide, and which almost completely disappeared in fixing.

The whole subject of the salts of silver is so interesting, that I hope some more capable experimenter will take it up and give us some fuller results than my slight chemical knowledge permits me to do. And it is with this idea that I publish these very incomplete and crude experiments.

THE RELATION OF ART TO PHOTOGRAPHY.

By J. Ward Stimson, *Superintendent of the Metropolitan Museum Art Schools, New York.*

[*Resume* of Remarks before the Society of Amateur Photographers of New York.]

By viewing photography in its best interpretation as one of the many forms of modern artistic expression, instead of merely mechanical imitation, how different in this sense a refined mind (such as we should expect among educated amateurs) should treat the material nature presented for his admiration from the mere business hack or professional exploiter. He should view it from the standpoint of how much genuine beauty and art satisfaction he could derive from it himself and cause others to do the same.

Then followed an analysis of artistic temperaments and how they were (in the last resort) based upon psychical more than physical conditions.

Mr. Stimson then showed how not only nature herself and art in general, but photography as one of her expressions, was both theoretically and practically affected by the physical, intellectual and moral conditions of the observer, and gave categories under which these naturally fell, together with their line of operation and the natural results of their labors.

The principles of pure beauty, and therefore beautiful composition, were in reality larger, broader, and higher than individual temperament, preference, or caprice, and approached in purity and certainty those of pure mathematics, being based upon laws that were universal and need affinities and affections generic to the race.

He elaborated this essential point as most important, and showed how the same principles operating in the mind of a true artist made beautiful composition in painting or photography alike, and inevitably revealed the personal temperament, originality, poetry, and perceptive faculties of the composer, as much as the actual charm of the material he selected.

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The lecture was illustrated by examples of good and bad composition, and was listened to with the utmost attention by the audience, the lecturer at its close receiving hearty applause.

The *President*, Mr. DEXTER H. WALKER, then spoke of the remarkable work done at the Metropolitan Museum Art Schools under the superintendency of Mr. Stimson. They are practically free, as the charge for tuition is exceedingly small.

An invitation was extended to the audience to visit the schools at 49th street and Third avenue, and examine the system of education in art in practice there.

HYDROQUINONE.

To the Editors of the BULLETIN.

I WROTE you a few days since regarding some results I had obtained by the use of hydroquinone developer. Since then I have developed thirteen more 5 x 7 negatives, fifteen lantern slides, and two 5 x 7 transparencies from the same pint bottle, and see no signs of its weakening. The lantern slides were all developed with two ounces of developer, to which I added five drops of saturated solution potassium bromide. The color of the slide can be varied from a slightly green tinge to a rich purple, depending on the exposure.

When I had finished developing I filtered all back into the original bottle, hence it now has a very small percentage of bromide; but from what I have already seen, I will put my faith in the contents of that bottle in preference to any others I have, and on my shelves are pretty nearly all the combinations of pyro, soda, potash, oxalate, etc., that have been brought into notice.

Next will come experiments with the hydroquinone as to proportion; its use with either soda or potash; quantity of sulphite of soda (if any), etc.

Yours truly, INQUIRER.

OUR ILLUSTRATION.

THE illustration which we present to our readers with this issue of the BULLETIN is from negatives by Mr. G. W. Wundrum, of Long Island, one of our most enthusiastic amateur photographers. The study of animals is always an interesting one, and the barn-yard offers more subjects in this line than any other place we know of. It is a wonder to us that more pictures of this character are not made, for the painter has often taken his *motif* from such scenes as are delineated in "Barn-yard Studies."

A WORD OF CAUTION.

IN the issue of the BULLETIN of November 26th, in the proceedings of the Society of Amateur Photographers of New York will be found a description of a camera box. This was exhibited on behalf of the Eastman Dry Plate and Film Company by Mr. H. S. Bellsmith as an article of their manufacture. We must remind all parties interested in camera making, and also all photographic merchants, that such a camera box as described at the above meeting appears to be an infringement of the patent of Erastus B. Barker, issued September 7, 1886, and assigned to E. & H. T. Anthony & Co.

ANTHONY'S
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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
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E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held Wednesday evening, December 7, 1887, with the *President*, Mr. FREDERIC GRAFF, in the chair.

The *Secretary* read a communication from the Liverpool Amateur Photographic Association, announcing an international photographic exhibition to be held in March, 1888, and inviting members to send exhibits.

The death of Mr. Evan Randolph, an active member of the society, was announced by the Secretary.

The Committee on Membership reported the election of the following active members: Messrs. Henry J. Hand, Emlen Cresson, Dr. William Thomson, and Theodore Fassitt.

The Committee on Celebration of Twenty-fifth Anniversary reported that in accordance with the plan proposed at the special meeting called for the purpose, a reception in honor of the event was held by the society at the Penn Club House on the evening of November 26th, the twenty-fifth anniversary of the date of its organization. In addition to invitations issued to members, a number of distinguished persons interested in photography throughout the United States and Great Britain, including officers of some of the more prominent photographic societies, were invited to be present. The evening was pleasantly passed in social intercourse of an informal character, relieved and enhanced by a collation prepared by the caterer of the Penn Club.

The Committee on American Lantern Slide Interchange requested members to prepare slides immediately for the purpose, so that they might be ready for forwarding to the other societies at the earliest possible date. A circular on the subject would be issued in a few days.

Nominations for officers and committees for 1888 were made, after which Mr. Bartlett moved that the society hold a public exhibition of lantern slides during the coming winter, and that a committee be appointed to arrange all details in regard to same. Carried. The Chair appointed Messrs. G. C. Morris, W. A. Dripps, and W. H. Rau.

Mr. JOHN BARTLETT read a paper on "The Shortcomings of Photography in Relation to Art," followed by Dr. ELLERSLIE WALLACE, Jr., on "Composite Photography." Both papers elicited great interest from those present. [See next BULLETIN.]

Dr. HOWE, admitting what Dr. Wallace had said in regard to composite photography not producing the type portraits claimed, referred to its use in detecting forged signatures proposed by Francis Galton, as one which seemed to have a practical value.

In the case of genuine signatures the pen strokes which were most habitual and gave character to the signature, were most pronounced in the resulting composite, while in forged signatures the errors made in imitating these strokes could readily be seen.

Mr. WALMSLEY called attention to the value of orthochromatic plates in photo-micrography as follows:

"In common with other workers in this department of photography I have long felt the shortcomings of all ordinary gelatine plates in rendering the true color valuations of very many microscopic objects, especially those of animal and vegetable tissues prepared by the modern methods of single, double, or even triple staining. Blue and light violet stains (so largely in use) were valueless for photographic purposes, and many of my most interesting preparations could not be reproduced by the camera.

"Among others which I have at various

times fruitlessly endeavored to photograph, is a beautiful dissection of the sting and poison sac of the honey bee; in which the sting and all external appendages range in color from a bright yellow to dark orange-brown, whilst the delicate membrane of the poison bag or sac is stained a bright, delicate blue. The impossibility of making a satisfactory negative from such a preparation on an ordinary gelatine plate will be apparent to every one. I have placed the specimen upon the table and invite all present to examine it for themselves.

"I have probably made not less than a dozen exposures upon this specimen, under very varying conditions as to make of plates, lighting, and length of time, but with invariably unsatisfactory results.

"If the exposure was long enough to give any detail in the darker portions, the blue sac was entirely over-done and obliterated; if on the contrary the time was shorter to suit this portion of the subject, the others were mere silhouette, so that I gave up the attempt in despair. You will see by the negative now to be passed around, and which is by all odds the best I made on ordinary plates, how utterly unsatisfactory were the results.

"A few days since, in talking with Mr. Carbutt on the matter, he suggested the employment of an orthochromatic plate, urging upon me their merits in rendering two-color valuations. I had given no prior attention to this subject, other than reading various articles thereon, which had appeared from time to time in the journals, and had no practical experience in the working of the plates. Mr. Carbutt very kindly furnished me with a package of them, and the same evening I proceeded to put them to the test on this hitherto impracticable subject, making two exposures, the resulting negatives from which I will now exhibit to you, together with prints from them, and one from a negative of same subject made with an ordinary gelatine plate. The results speak for themselves. The first exposure was made without a color screen, and the rendition of the color valuations is, as you will observe, surpassingly beyond that given by an ordinary plate. In the second attempt I interposed a screen of lemon color tissue paper between the light and the object, and trebled the length of exposure. The result is a negative in which the printing value or capacity of the blue and yellow portions of the specimen are precisely the same; whilst most of the details in the darker brown and orange parts are well brought out.

"This gratifying result is so remarkable and interesting, pointing to such an important use for these plates, that I have felt impelled to bring the subject before the society, and to add my mite to the general fund of information we are all striving for."

Mr. Walmsley exhibited three negatives as referred to in the above communication, as well as mounted albumen prints therefrom, and an 8x10 enlargement on bromide paper under a microscope. Upon the table he also showed the preparation magnified 24 diameters, the same power as that employed in making the photograph. After the lights were turned down, a lantern slide of same subject was exhibited upon the screen.

Mr. BELLSMITH, of the Eastman Dry Plate and Film Company, who was present, called attention of the members to a new product of that company, known as Eastman's Transferotype Paper.

This is a paper prepared from the same emulsion as the permanent bromide paper, but in such a way that after developing and washing the contact or enlarged print, it may be laid face down upon any object upon which it is desired to transfer the picture, and after drying under pressure, the paper can be removed by the application of hot water, leaving the print upon the object where it was desired. Transfers may be made in this manner upon opal glass, china plaques, tiles, lamp shades, glass for transparencies and lantern slides, canvas for artists' use, engravers' blocks, etc. Several specimens showing the various uses of the paper were exhibited by Mr. Bellsmith, and were examined with great interest.*

The evening was concluded by an interesting narrative by Mr. GEORGE VAUX, Jr., of "Some Photographic Experiences in the Yosemite Valley and Other Parts of the West." A large number of slides were shown on the screen by Mr. Vaux, which graphically illustrated his narrative. The negatives were made on Eastman's films and were of excellent quality. Many were made from points at high elevations, rarely visited by photographers.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

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SOME musicians are fond of speaking of the "colors" of the tones of various musical instruments. We wonder if they have noticed that the cornet is always "blew?"—*Burlington Free Press.*

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*This paper is apparently the regular Eastman American film with a slow emulsion.

ON THE ACTION OF DIFFERENT COLORING MATTERS UPON THE BEHAVIOR OF BROMIDE OF SILVER IN THE SOLAR SPECTRUM.

BY DR. J. M. EDER.

(From Original Memoir of the Author.)

(*Continued from page* 703.)

I EXAMINED several other coloring matters which affected sensitizing maxima upon bromide of silver in the same direction, particularly bleu coupier and diazoresorufin, which show two absorption bands. Again there are found two more or less distinct sensitizing bands in the spectrum picture upon the bromide of silver gelatine colored with the same; and each of them, according to the rule already mentioned in a former article, is removed towards the less refractive end of the spectrum.

	Mean of the absorption maxima of the coloring matter in colored gelatine sheets.	Mean of maxima of the photographic sensitizing upon the colored bromide of silver gelatine.	Difference of the absorption maximum in the gelatine and the sensitizing maximum of the colored bromide of silver in millionths of millimeter wave lengths.
Bleu coupier...	Gives two absorption bands: 1. A strong one in orange-red at $\lambda = 586$. 2. A weaker one in green.	Gives two sensitizing bands: 1. One in orange-red at $\lambda = 623$ 2. A weaker and wide sensitizing band in green.	$d = 37$
Diazoresorufin	Gives two absorption bands: 1. One in orange-yellow at $\lambda = 589$. 2. One in green at $\lambda = 544$.	Gives two sensitizing bands: 1. One in orange at $\lambda = 614$. 2. In green at $\lambda = 560$.	$d = 25$ $d = 16$
Green from methyl-salicyl-aldehyde and dimethyl aniline......	An absorption band in red at $\lambda = 633$	A sensitizing band in red at $\lambda = 660$.	$d = 27$
Orseilline.....	Broad, strong absorption band in green and yellow-green adjoining a weak absorption towards red about at $\lambda =$ 580-590.	Broad sensitizing band; powerful from green to yellow, adjacent red about $\lambda = 613$.	$d = 23$ to 33 (doubtful.)

These results show that the coloring matters mentioned sensitize the bromide of silver for the less refractive rays in the same proportion as those examined by me during last year. The displacement of the sensitizing maxima corresponding with the absorption, moves also in the same limits, as mentioned at that time.

In bleu coupier, as well as diazoresorufin, two more or less distinct maxima in orange and in green can be observed, and, connecting with this, a weaker action into red.

One of the pigments which act so being of a bright red, the other undetermined blue-violet, this is a new proof of the assertion (although not contested by anybody) that the proper physiological color of a body has nothing in common with the immediate sensitizing appearances in the spectrum. In this case the connection of the sensitizing with the absorption again appears distinctly, both mentioned coloring matters possessing two absorption bands, giving two corresponding sensitizing maxima. In each case the displacement of the sensitizing appears towards the less refractive end of the spectrum; and bleu coupier, whose absorption band is further towards orange than the corresponding one of the diazoresorufin, affects also the position of the sensitizing maximum further towards orange. (See further below). Thus the sensitizing spectrum of both coloring matters can be distinguished when carefully examined, also the stronger sensitizing which bleu coupier produces for the red rays from C to A.

Still another analogy of the sensitizing with the absorption bands might be mentioned. In both cases the width and direction of the curvature changes with the concentration, which expresses the action in question.

Most absorption bands of the coloring matters for bromide of silver when greatly thinned, (*e.g.*, under $\frac{1}{1000000}$) appear as weak shadows. With increasing concentration the sensitizing bands become stronger and rise generally to a more or less distinct maximum having a constant position in the spectrum. At still greater concentration the superfluous coloring matters show an injurious action upon the quantitative total sensitiveness of the colored bromide of silver, and the sensitiveness can even be greatly depressed when the coloring value is considerable, as was demonstrated first by Dr. H. W. Vogel and confirmed by myself. There are some less significant appearances; certain spectral districts are suppressed, and the effect of the coloring-matter addition is near to that of a colored screen, and is made worse by the injurious influence shown by most colors (as also numerous other salts) upon the light-sensitiveness of the bromide of silver as soon as their quantity surpasses a certain limit, so that the sensitizing bands may become again smaller.

The limits of concentration within which the coloring matters act most favorably, varies according to the nature and tinting strength of the color. With eosine the action is best when greatly diluted (about 1 to 30,000 to 1 to 50,000), and the strongly tinting benzopurpurin and congo has also to be applied diluted. Indulin, as well as cœrulein, can be applied much stronger without injury, and the best effect is obtained by a several times increased concentration.

The best concentration of the sensitizing baths for each color matter has to be determined by experiment.

Behavior of Bromide of Silver Gelatine without Color Addition towards the Solar Spectrum.—It is known that bromide of silver gelatine is highly sensitive to ultra-violet, violet and blue, and that the light-sensitiveness decreases very quickly from blue-green towards yellow and red. As a rule the solar spectrum cannot be photographed distinctly upon ordinary bromide of silver gelatine plates (without color addition) beyond the Fraunhofer line C. By augmented reflection from the prism sur- (in my apparatus from three prisms), such quantities of diffused light will enter the apparatus that at longer exposure an even coloration of the whole picture surface is obtained. Therefore the exposure must not be prolonged until the orange and red have acted sufficiently strong, as the diffused white light (as also the very effective blue light) will effect a total decomposition. But if the main mass of blue and violet rays is excluded, by adjusting yellow or red glasses in front of the slit or the spectrum apparatus, good photographic spectrum pictures are obtained, which extend into the red. Draper could even photograph the infra-red behind red glasses upon bromide of silver gelatine containing no coloring matter as sensitizer.

I found chrysoidin screens very suitable to suppress the blue. An alcoholic (or aqueous) solution 1 to 10,000 to 1 to 16,000 in a vessel of 11 m.m. (immediately in front of the slit) suppresses the rays from F to G; in larger concentration even from E to nearly H. From E the light passes through, very little weakened, to the extreme red; the ultra-violet is also only moderately subdued.

Behind yellow screens the light-sensitiveness of bromide of silver gelatine can easily be traced into the red. But the plates sensitized with suitable coloring matters are far ahead of the ordinary plates in light-sensitiveness for the less refractive rays.

Translated by H. D.

MONTREAL AMATEUR PHOTOGRAPHIC CLUB.

At the annual meeting, held Saturday, November 19th, the following were elected officers for the ensuing year.

James G. Shaw, *President;* J. S. Hall, Jr., *Vice-President;* F. G. Gnaedinger, *Treasurer;* J. W. Davis, *Secretary;* R. M. Hannaford, G. Y. Bishop, A. B. Gwilt, T. H. Lightbound, *Committee of Management.*

With our present membership of thirty-three, the prospects of the club appeared so prosperous, it was decided to hold an exhibition of the work done by the members, to consist of mounted photographs and lantern slides. As an inducement to amateur photographers of this city who are not members of the club, it has been proposed to invite them to co-operate.

Our present membership, as noted above, shows an increase of twenty-seven over our membership when the club was formed, exactly one year ago.

The prospects for a first attempt at an exhibition appear unusually fair, as a partial canvas of the members has resulted in one hundred and fifty-three prints being promised. It is probable that the exhibition will consist of at least two hundred and fifty pictures.

The question of the present duty, 15 cents per square foot, as now levied by the Canadian government on dry plates, was discussed, and it was resolved to join in any reasonable protest which might be in process of promulgation.

The thanks of the club are due, and are hereby tendered, to the publishers of the BULLETIN for their kindness in furnishing a copy for the use of our members.

J. W. DAVIS,
Secretary.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE night of November 8th, which, as many will remember, was the end of the very exciting Municipal election in this city, showed conclusively that the love of the art of photography rose superior to the allurements even of local politics. Quite a number of the members of the Society of Amateur Photographers of New York were to be found all day at their rooms, 122 West Thirty-sixth street, and in the evening in increased numbers were present in the ample lecture room of the society, the attraction being a lecture on "The Relation of Art to Photography" by Mr. J. Ward Stimson. His remarks were listened to with great attention, and evidently produced the effect desired by the lecturer, as all seemed deeply interested. [See page 757.]

The next in order on the programme was the demonstration of the working of the Anthony Reliable Bromide Paper by means of artificial light. Mr. David Cooper, assisted by Mr. Cossit, undertook to demonstrate practically the working of the process. One of the new, but by this time well-known, Cooper enlarging lanterns, which recently received the only medal offered by the Photographers' Association of America for the most useful invention in photographic apparatus, was placed in operation.

Mr. Cooper proceeded with the demonstration by first making an enlargement from a 4 x 5 negative, which was so successful as to receive the approbation of the spectators. Next a portrait negative of two pretty children was inserted, and an excellent enlargement was the result of 70 seconds' exposure. The development was carried on in the lecture room on an improvised table, so arranged that nearly all could see plainly the method of working; and as the operator not only tried to give all the information at his disposal, but requested that questions be asked which he would be ready to answer, it is to be hoped that much information was received by those present on this subject.

After the demonstration, the remaining ten sheets of paper out of the dozen opened for the purpose of demonstration were presented to the society with the compliments of E. & H. T. Anthony & Co., for comparative tests with any other paper in the market, and Mr. Cooper stated that the lantern would also be left in charge of the society for several days, so as to enable the members to become familiar with its working. We have since heard that the individual experience of these experimenters has borne good fruit in the orders for lanterns.

A collection of bromide enlargements 40 x 60, 30 x 40, etc., were also exhibited as evidence both of the capacity of the lantern and the quality of the paper. These were greatly admired by all who had the opportunity of seeing them.

ROCHESTER ACADEMY OF SCIENCE.—PHOTOGRAPHIC SECTION.

AT the regular meeting of the Photographic Section of the Rochester Academy of Science, held November 29th, experiments were again tried with the magnesium flash light with better results than were obtained at the previous meeting.

* * *

The annual soiree of the Academy was held at Washington Rink, on the 6th instant, about three thousand being present. The photographic section was well represented, C. J. Player exhibiting architectural views; Hovey Brothers, marine views; C. Williams, bromide prints; M. B. Punnett, miscellaneous views (the majority of them taken on plates made by himself), H. R. Gilbert, a fine display of portraits and interiors taken with the magnesium light.

Messrs. Hagreen, Mathews, Spenser, Guebelle, Kerrigan, and Ocumpaugh also showed themselves masters of the art; while Mr. Gee's views proved that there are few, if any, points in the art of combination printing that he did not understand.

Our President, Mr. G. H. Croughton, did not show up in the photographic section, but his pastel and off-hand crayon sketches outshone those of the art section proper.

Commencing Tuesday, December 20th, meetings will be held every alternate Tuesday, to which all strangers are cordially invited. Any person having anything new in the line of photography can make arrangements to bring it before the section by addressing

Milton B. Punnett,
Secretary,
30 Magne street.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Regular Meeting, December 6, 1887.

President Newton in the chair.

The Chairman of the Executive Committee reported that at the next regular meeting, January 3, 1888, Professor D. L. Elmendorf, assisted by Mr. A. D. Fisk, would give a lantern exhibition entitled, "Photographic Recollections of the Alpine Mountains by a Tramp." He also reported that since publishing the programme for December 6th, Messrs. Mason and Ehrmann had kindly offered to photograph the audience by means of the flash light. The composition of this light would be explained by Dr. Ehrmann, and what it really was would be made manifest to the audience in the brief time required for making the negatives. The results of these experiments would be announced at the next meeting, and examples shown of what could be done by this method of artificial lighting. Beside the lantern exhibit promised by Mr. A. D. Fisk, *President* Newton would show a few examples of slides made from a different standpoint, and in direct opposition to the opinions entertained by many dealers in this special branch of photography.

The Chairman of the Executive Committee also stated that Mr. James Bowie had kindly consented to show some English pictures pertaining to Lady Jane Grey, together with a brief sketch of her ten days' reign. He had also placed in the hands of the committee two very remarkable photographs made by Dr. Edward C. Titus, one a moonlight scene, made perhaps in the shortest time on record (viz., 20 minutes), and the other a view from a car window while the train was running at the rate of thirty miles an hour. Those of the audience who desired to see the excellence of these pictures would have the opportunity after the close of the regular exercises.

Notice of the informal meeting of the section December 21st was also given, and a cordial invitation extended to all interested in technical photography.

Immediately following the above report, Messrs. Ehrmann and Mason were introduced, and spent the remaining portion of the first hour of the meeting in experiments with the different compounds used in producing the flash light, and in explaining a mechanical device for firing these compounds. This was followed by the lantern exhibit.

President Newton said (as regarded the slides he exhibited) he had been for a long time calling attention to the radical defects in lantern slides furnished by dealers. In this branch of photography the difficulty had arisen from the fact of erroneous ideas being promulgated in preference to the requirements of properties in slides. It had been held and believed that a slide, in order to be fit to use in the lantern, should have perfectly clear glass in the shadows; be exceedingly brilliant; and that one could not use the same plate or the same process for making lantern slides as for the production of a negative. For many years this idea had undisputed control of the minds of producers and vendors of this class of goods. In fact it seemed to have been the primitive idea. The result was that the slides usually used in lantern exhibitions were flat, hard, and without atmospheric effect in landscape views. Such slides, as a rule, represent the flowers and foliage of midsummer as growing out of snow, which to an artistically educated eye is exceedingly distressing. He held that any plate or process making a good negative would make a good lantern slide. In taking a landscape the atmosphere should be photographed, and its effect would then show in the resultant print; otherwise it was very imperfect, as aerial perspective in a landscape view is quite as essential as the linear perspective. The great effort hitherto had been to exclude every appearance of atmosphere from the slide.

The pictures prepared and exhibited were made on commercial negative plates (Stanley's), and particular attention was requested to the points designated when they are thrown on the screen. This subject is of so much importance that he was disposed to go a step farther, and challenge the advocates of the old system to test the question some evening by a comparative exhibit of fifty slides of each, and have a committee of three artists observe and report to the section the results viewed from an artistic standpoint.

The time occupied by the flash light experiments and the exhibit of the President's slides, shortened and disarranged, to some extent, Mr. Fisk's carefully prepared exhibit, and prevented the reading of the paper previously announced.

The author, however, stated to two of the reporters of the daily press that "Photo Shavings" would keep; and it was the policy of the section to utilize that first which had the least keeping properties.

Mr. Bowie's sketch of Lady Jane Grey's ten days' reign (illustrated with finely colored English slides), was also abbreviated for want of time; but notwithstanding the lateness of the hour, and the rapid succession with which the pictures were presented, he was listened to with marked attention and interest.

Mr. Bowie apologized for the haste and abbreviation of his sketch, and hoped at some future time he might serve the section under more favorable auspices.

The last picture on the screen was conspicuously marked "Good Night," and the audience without formal adjournment dispersed.

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[*From the Photographic News.*]

HOW TO MAKE LANTERN SLIDES ON GELATINO-BROMIDE AND GELATINO-CHLORIDE PLATES.

BY I. H. JENNINGS.

NOT many years ago photography was an art that required considerable courage, manipulative skill, and dogged perseverance to practice with success. Now however "all is changed;" the comparatively recent introduction of the gelatine process has rendered photography so attractive a pursuit—we were almost going to say amusement—that each day sees new recruits added to the army of photographers, many of whom soon take rank as efficients on the roll. In the wet plate days, not only the dabbling with collodion and nitrate of silver soon disgusted many a would-be photographer, and got him into serious trouble with the female deities of the house, but the size and cumbrous nature of the apparatus (for to carry even a quarter plate camera and accessories was no light task) soon completed his discomfiture. Now, happily, cameras of feather-weight, folded into the smallest possible compass, are the order of the day; and armed with one of these, and three or four double dark slides carrying six or eight prepared plates, a day's photography becomes a real pleasure, instead of being, as formerly, a serious and laborious undertaking.

Yet let us not be mistaken. Clean as is the gelatine process, and easy as it may be to attain a certain amount of proficiency in modern photography, so far as results go the wet collodion process has not been surpassed for general work, and to produce pictures of the highest class on gelatine plates calls for as much neatness and skill as the manipulation of wet collodion. This is perhaps especially the case in the production of lantern slides on gelatino-bromide or gelatino-chloride plates. To produce good slides on these plates demands far greater cleanliness and neatness of manipulation, although not greater skill, than the production of a gelatine negative. Many an amateur who can make fair negatives which give prints of average excellence, fails utterly to turn out lantern slides of even passable quality, solely through lack of neat and clean manipulation.

The magic lantern (or "optical lantern," as some prefer to call it) is gradually taking a most important place, not only for the purpose of amusement, but also as a scientific instrument. How unsatisfactory is a lecture illustrated by means of charts and diagrams, which no one can see except those sitting close to the lecturer. And how many an enthusiast has spent weary hours in preparing such charts and diagrams; or, at a heavy expense, employed a professional draughtsman to produce them, when a few pleasant hours with a camera and printing frames would have made him possessor of a set of valuable slides, true to the originals, whether landscape or copies of book illustrations; and possessing the further advantage, when exhibited in any ordinary oil lantern, of being seen and understood without difficulty by the most distant of his audience. To make slides fit for illustrating a lecture requires neither great photographic skill nor lengthy experience—although the higher the skill and the longer the experience, doubtless, the more satisfactory the results. Yet, possibly for want of knowing this fact, we still find clever men, year by year, making lantern slides to illustrate their lectures by the slow and laborious "transparent slate" process. Such slides, no matter how carefully and exactly done, can never equal those produced by means of photography.

It is for the benefit of such persons that the present articles are written, in the hope of inducing them to avail themselves of the help of photography in illustrating their lectures, to the greater satisfaction of themselves and their audience.

Excellent as are the commercial lantern

slides, and numerous as are the subjects they illustrate, they do not, and cannot, satisfy all requirements. Members of literary and philosophical societies, of young men's Christian associations, etc., to say nothing of the members of our learned societies, often desire to deliver a lecture on some special subject, slides to illustrate which can be found in the lists of none of the manufacturers or dealers. It is here where the ability to produce good gelatine positives becomes of the greatest use, and here the amateur can become a lantern slide manufacturer without competing with those professionally engaged in producing them.

Again, the tourist on his holiday trip, if able to take a decent negative, may bring home a store of pictures of the prettiest or most important scenes met with on his travels, and go over his journey again with his friends at home by means of his lantern and collection of slides made from his negatives. No need to carry a ponderous camera, even though it be of the type formerly called "portable," such as the whole plate camera in the possession of a photographic renegade of twenty-five years ago—a camera of trunk pattern, two feet long, and of ponderous weight, the only thing about it that entitled it to the name of "portable" being a strong brass handle on its middle; a camera concerning which a wag very properly remarked was the very thing for a tourist, seeing that its cavernous recesses afforded ample space not only for needful apparatus, but also for clothes and baggage for a six weeks' trip. No, the tourist requires only a fairy-like camera and feather-weight apparatus to enable him to produce negatives of the highest quality, which will afterwards serve the double purpose of making lantern slides or enlargements on bromide paper.

I.—APPARATUS.

For lantern slide work a special camera is very desirable, although not absolutely indispensable. In all work where exactness and neatness are requisite, tools really adapted to the work not only save much annoyance and unnecessary labor, but are great aids in producing the best results. Although a bad workman proverbially blames his tools, it is nevertheless true that an expert workman is not satisfied with bad ones, but always desires to have the most perfect that can be obtained. Hence, although a camera of almost any size and shape can be pressed into the making of lantern slides, it is far more convenient, to say the least, to possess a camera specially fitted for such work.

If a camera larger than a quarter plate size be employed in taking negatives that are afterwards to be used in the production of lantern positives, it will be necessary either to fit the instrument with carriers for quarter plates, or to make the lantern positive from large negatives by copying in the camera; a process always more or less laborious, and not always satisfactory, from the difficulty of getting awkward sizes of views, such as 7½ x 5, to fit in the ordinary lantern size plate, 3¼ x 3¼.

(*To be continued.*)

Bibliography.

PHOTOGRAPHIC MOSAICS. Edited by Edward L. Wilson, New York. 1888.

This popular little annual is again upon our table. It is illustrated with three excellent photo-mechanical prints by the Mosstype process, and contains a good selection of valuable papers by prominent professional and amateur photographers. There is an excellent review of recent photographic work by the editor, which is full of suggestions for the future, and in the characteristic strain of this well-known writer. The various papers throughout the balance of the volume are from pens well-known in the photographic world, and the whole forms a compendium of photographic information that should be in the studio of every photographer.

"THE ROSE OF NEW ENGLAND," NORWICH, CONN. From photographs. Published by Cranston & Co., Norwich, Conn. 1887.

This is an exceedingly handsome collection of photo-mechanical prints ($4\frac{1}{4}$ x 7) illustrating the City of Norwich and its environs. The selection of the views has been carefully done and with a truly artistic feeling, while their reproduction has been very carefully carried out. A particularly artistic and pretty cover is entirely in keeping with the good taste displayed in the production of the whole collection, and we must compliment Cranston & Co. for issuing a work at once artistic and interesting.

A HISTORY OF PHOTOGRAPHY. By W. Jerome Harrison, F.G.S. New York: Scovill Co.

This is one of the series of volumes by the well known Scovill Company, and reflects credit upon them for its neat and generally good appearance. The subject is treated by a master hand in a masterly manner, and is filled with interest for every photographer, professional or amateur, who cares something more for his art than its present status. In looking through these chapters one feels keenly the rapidity of the progress that has brought our art to its present condition; and a feeling of enthusiasm for the future fills us when we contemplate the possible achievements of photography that are indicated from the lines of advancement in the past. The book is well written, occupies 136 large octavo pages of clear type, and is worthy of the author and the American editor.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—T. J. writes: I am about to build a small traveling car, and would like to have some advice about lighting it without building too high, yet I want to build it just as high as possible.

A.—When you have decided upon about the height you wish to have your car, go to a sky-light maker and get what is called a "heap" sky-light. These are made all sizes and can be obtained in any large city. It should be of light construction and slope (as its name indicates) on all sides. Have a shutter fixed inside so that all the light can be excluded and use an oil or candle lamp to develop by, with ruby or dark amber glass chimney.

Q.—G. L. G. writes: I have been appointed by our local club to conduct a series of experiments with magnesium light and to make an exhibition of it. Any directions or suggestions you may be able to give me with regard to the position of the light relative to the camera will be gratefully received.

A.—We can suggest very little beyond what has already appeared in the pages of the BULLETIN. In regard to the position of the light, about ten feet from the subject is considered a convenient distance, and the flash should always come outside the angle of view of the lens. A thin tissue paper screen held near the light greatly softens the shadows.

Q.—J. W. D. writes: Please inform me what the effect would be if 240 grains of ammonium bromide be added to an equal quantity each of mercuric chloride and ammonium chloride. Having recently ordered from a druggist here No. 1 of Carbutt's intensifier, the formula for which is

Bichloride of mercury......	240 grains.
Ammonium chloride.......	240 "
Water	20 ounces.

He (the druggist), added on his own account 240 grains ammonium bromide. Would it be safe to use the solution as supplied or should it be reduced?

A.—We do not think it would be safe to use the mixture you mention. Such a large quantity of bromide of ammonium would seriously interfere with intensification, if it would not entirely prevent it. It is better to make the solution up properly rather than waste time and patience in trying to use it as per above formula.

Q.—S. J. M. writes: Can you, through your columns, say in a general way whether it would be better for a young man desiring to become proprietor and inclined to settle in a country town, to purchase the good-will and material (which latter is invariably old and worthless) of an established gallery, or to open anew with fresh material.

A.—The questions you ask would be best answered by a good practical business man who is also a photographer. It is not always best to assume that because a gallery is old, therefore the apparatus is worthless; in some cases the most valuable apparatus is found in such places. Better consult a good business man who knows the place.

Q.—E. E. writes: Will you please answer the following questions through the BULLETIN. Lately I changed my dry plate (from Forbes I went to a Carbutt) but did not change my developer. My plate came out of the developer all right and looked as usual, but I could not get it to fix, though I used nearly a saturated solution of hypo. I let it stay in a good hour and then washed it well; but when it was dry it had almost every imaginable color possible, pink and a greenish look. Can it be that the developer I use (ammonia developer) prevents the plate from fixing? I developed a Forbes with the same developer and same hypo bath later, and it came out all right.

A.—Your trouble appears to come from red and green fog, which arise from the ammonia and an incorrect exposure of the plate. Try the soda developer; this never gives a colored fog. Make sure that your hypo solution is all right and that you are not using some other salt, soda carbonate for instance; we have seen just such a mistake made.

Views Caught with the Drop Shutter.

As we go to press we receive a kind invitation to the second annual exhibition of the Pacific Coast Amateur Photographic Association. We have to thank the committee for their courtesy, and hope to be able to report more fully in our next issue.

A novel, convenient, and valuable business calendar for 1888 is issued by the Pope Manufacturing Company, of Boston, Mass. The calendar proper is in the form of a pad, containing 366 leaves, one for each day in the year, to be torn off daily. A portion of each leaf is left blank for memoranda, so arranged that the memorandum blank for any coming day can be turned to immediately at any time. The pad rests upon a portable stand, and when placed upon the desk or writing-table the entire surface of the date leaf is brought directly, and left constantly, before the eye, furnishing date and memoranda, impossible to be overlooked. Upon each slip appear fresh quotations pertaining to cycling from leading publications and prominent writers.

We have before us a list of the art publications of the Photo-gravure Company of New York. As is to be expected these include some of the most interesting productions in the working of their well-known photo-mechanical process. Illustrations of "Sleepy Hollow," "She Stoops to Conquer," "The Song of the Brook," and a number of others indicate the style of work they are reproducing. The present list is embellished with a handsome photo-gravure of Miss Ada Rehan, as "Peggy" in the Recruiting Sergeant, which appeared in the Bulletin some time ago.

Mullett Bros, the well-known and enterprising photographic merchants of Kansas City, send us their handsome new catalogue, No. 9, for 1888. As we look through the two hundred neatly printed and finely illustrated pages, we cannot help feeling that this firm is fully abreast of the times, and second to no other firm in the great West. Everything that the photographer needs, form the dry plate to the finished print; every accessory; every kind of frame, is found in this large quarto volume, and we recommend our Western friends to send for it.

The Excelsoir View Company, C. H. Sylvester and J. M. Brown, managers, have removed their branch studio from Tioga, Pa., to 159 Railroad avenue, Elmira, N. Y.

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